

ATS-12204
#10 Oct. 39

NASA CR-132607

File with

N75-18621

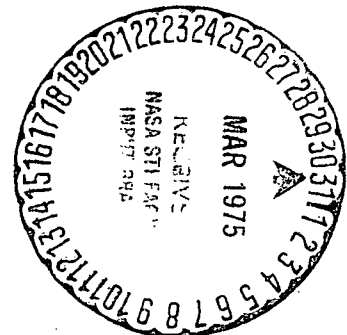
PROGRAMMER'S MANUAL
FOR
STATIC AND DYNAMIC
REUSABLE SURFACE INSULATION STRESSES
[RESIST]

Prepared for
National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23365
Under Contract NAS 1-10635-17 and -19

by
Patricia L. Ogilvie
Alvin Levy
Fred Austin
Irving U. Ojalvo

Grumman Aerospace Corporation
Bethpage, New York 11714

October 1974



FOREWORD

The work reported herein was performed by the Grumman Aerospace Corporation under the NASA/Langley Master Agreement and Contract No. NAS 1-10635 for the Development and Implementation of Space Shuttle Structural Dynamics Modeling Technology. The Work Statements of Task Order No. 17, "Development of An Analytical Program to Analyze Reusable Surface Insulation for Shuttle," and Task Order No. 19, "Development of a Thermal Stress Analysis Program for Reusable Surface Insulation for Shuttle", authorized and specified the tasks to be performed in this study. The period of performance for this effort was for 15 months starting in June of 1973.

The overall supervision of programs under the Master Agreement is provided by Mr. E. F. Baird, Master Agreement Program Manager. The Project Manager for Task Order Nos. 17 and 19 was Dr. I. U. Ojalvo. Many individuals at Grumman contributed to the work reported herein. However, the authors wish to specifically acknowledge the Applied Mechanics Group of the Grumman Research Department for supplying some of the basic finite element subroutines required for this work.

CONTENTS

<u>Section</u>		<u>Page</u>
I.	INTRODUCTION	1-1
II.	FLOW CHART	2-1
III.	OVERLAY CHART	3-1
IV.	DATA SET ALLOCATIONS	4-1
V.	SUBPROGRAM CALLING SEQUENCE AND COMMON BLOCKS UTILIZED	5-1
VI.	BRIEF DESCRIPTION OF SUBPROGRAMS	6-1
VII.	TYPICAL SUBPROGRAM OUTPUT	7-1
VIII.	REFERENCES	8-1

I. INTRODUCTION

This manual presents programming information for the RESIST (REusable Surface Insulation STresses) program for the dynamic and thermal stress analysis of the Space Shuttle surface insulation. A user's manual which describes the necessary input is contained as Appendix B in both References 1 and 2. The engineering solution procedure programmed is also described in these reports.

The present manual contains the overall flow chart of the program, overlay chart, data set allocation and subprogram calling sequence, along with a brief description of the individual subprograms and typical subprogram output. Two versions of the program exist, one of which is written completely in FORTRAN. This version is compatible with both the IBM 370/168 and CDC 6600 machines. A more efficient second version exists which runs only on the IBM computer since it contains several assembly language subroutines. These routines are:

- DINIT with entry points: DREAD
PREAD
DWRITE
PRITE
REND
WEND
DFIND
DCLOSE
- SECOND with entry point ICHRON

II. FLOW CHART

The overall logic for the RESIST computer program is displayed schematically through use of 12 modules and 6 logical and arithmetic "if" (diamond-shaped) boxes in Figure 2-1. Input data for Module I is detailed in References 1 & 2. Finite element topological information for the RSI tiles and primary structure is automatically generated in Module II. The element stiffness matrices for the primary structure and a typical RSI tile are generated and assembled in Module III, after which a test is performed to establish if the statics (ST) or modal vibration (VB) option is to be exercised.

When the vibration option is operational, the index (designated NH in the program) is set to zero and the primary structure mass matrix and two tile mass matrices are generated. The primary structure mass matrix is then combined with the tile mass matrix, which only approximates tile inertia effects. The approximation used is associated with the neglect of tile stiffness and a kinematic assumption, which is tantamount to assuming that the tile deformations are devoid of shear effects for the purpose of computing their modal kinetic energy. Approximate mode shapes and frequencies for the primary structure are then computed in Module V (designated AIARM and detailed in Reference 1).

The iteration index is then stepped up by 1 and the primary structure deflections are imposed at the tile/primary-structure interfaces, and the tile deflections are obtained in Module VI. This procedure is performed for all tiles, or only for those designated by an input option. If all tiles are treated in Module VI, a Rayleigh Quotient is computed next (Module VII) to update the system frequency. A tile-loading matrix is then formed (Module VIII) and applied to obtain new primary structure deflections in Module IX.

Primary structure deflection differences from the previous iterate's results are checked for convergence against an input tolerance. If convergence has been achieved, the program computes tile and plate stresses when these are requested by the user. If convergence is not achieved, a test is performed to determine whether the maximum number of iterations have been performed. The program recycles through Modules VI through IX until convergence is achieved or the maximum number of iterations have been performed.

When the statics option is selected, the index NH is set to 1 after Module III. The primary structure loading is then computed in Modules X and VIII. The procedural logic then cycles through Modules IX, VI and VIII until convergence or the maximum number of iterations is obtained. Regardless of which type problem is solved, ST or VB, all program modules with the exception of IV, V, VII and X are shared.

III. OVERLAY CHART

The following is the overlay chart for the RESIST program as used on an IBM 370/168. This chart contains the root segment plus five levels of overlay (denoted by A through E), and depicts the subprograms and labeled common blocks (enclosed within slashes, e.g. /KTAB/) of each segment, along with the starting address and length (in bytes) of each segment. The numbers in the upper right hand corner of each box denote the segment number. This overlay structure also applies for the CDC 6600 except that the segment lengths are different.

IV. DATA SET ALLOCATIONS

The following chart identifies the unit and file number assignments for each data set. Symbols used in the chart are:

BC	Boundary Condition
DOF	Degrees of Freedom
K	Stiffness Matrix
M	Mass Matrix
P	Load Vector
PS	Primary Structure
δ	Deflections
ω	Natural Frequency

		FILE		
UNIT NO.	UNIT NAME	1	2	3
1	JDSRN	PS boundary conditions (No. nodes x 11)		
2	ISCR	Normalized PS mode shapes (No. modes x No. DOF)	Partition of tile $K - \omega^2 M$ into K_{AA} $\begin{pmatrix} \text{No. tile DOF} - \text{No. bound DOF} & \times \\ \text{No. tile DOF} - \text{No. bound DOF} \end{pmatrix}$	
3	JSCR	PS load vector with applied BC's (No. DOF x 1)		
4	MDSRN	PS loads with PZ = 0 before BC's are applied (No. nodes x 6)	PS total stiffness matrix with zeroes in upper triangle (No. DOF x No. DOF)	
6	ITAPEW	Output to printer		
7	NPIRI	Nodes, coordinates & matl properties for each tile member (No. members x 81)		
8	NDSRN	1 PS element mass matrices (No. elements = No. rows) 2 PS total diagonal mass matrix (No. DOF x 1)		
9	LDSRN	1 PS element stiffness matrices (No. elements = No. rows) 2 PS total mass matrix (No. DOF x No. DOF)	Scratch	
10	IDSRN	1 PS geometry (No. nodes x 5) 2 Decomposed lower triangle of PS K-Matrix (No. DOF x No. DOF)	PS deflections (No. DOF x 1)	
11	IUNIT	Partition of tile $K - \omega^2 M$ into K_{AB} $\begin{pmatrix} \text{No. tile DOF} - \text{No. bound DOF} & \times \\ \text{No. bound DOF} \end{pmatrix}$	Partition of tile $K - \omega^2 M$ into K_{BB} $\begin{pmatrix} \text{No. bound DOF} & \times \\ \text{No. bound DOF} \end{pmatrix}$	
12	JUNIT	1 Tile element stiffness matrices (No. elements = No. rows)		
	NPIRF	2 Scratch		
13	KUNIT	Full tile K-matrix $\begin{pmatrix} \text{No. tile DOF} & \times \\ \text{No. tile DOF} \end{pmatrix}$	Partition of tile load vector into P_A $\begin{pmatrix} \text{No. tile DOF} - \text{No. bound DOF} & \times \\ 1 \end{pmatrix}$	Partition of tile load vector into P_B $\begin{pmatrix} \text{No. bound DOF} & \times \\ 1 \end{pmatrix}$
14	LUNIT	1 For tile: $K_{AA} \begin{bmatrix} P_A - K_{AB} B_B \end{bmatrix}$ $\begin{pmatrix} \text{No. tile DOF} - \text{No. bound DOF} & \times \\ \text{No. tile DOF} - \text{No. bound DOF} \end{pmatrix}$		
	NPIRK	2 PS deflections associated with individual tile (No. tile bound DOF x 1)	Boundary loads generated in tile analysis (No. bound DOF x 1)	
15	ITAPER	1 Input data set in card image format (20A4)		
	NPIRA	2 Tile load vector (No. tile DOF x 1)		
16	NTAPEI	Input stream		
17	NPIRB	1 PS members (No. elements x 100) 2 Tile ($K - \omega^2 M$) $\begin{pmatrix} \text{No. tile DOF} & \times \\ \text{No. tile DOF} \end{pmatrix}$		
18	NPIRC	Scratch		
19	NPIRD	Tile displacements - boundary displacements $\begin{pmatrix} \text{No. tile DOF} - \text{No. bound DOF} & \times \\ 1 \end{pmatrix}$		
20	NPIRE	Tile strain matrix (No. elements = No. rows)	Tile total mass matrix (1 x No. tile DOF)	Tile total stiffness matrix with zeroes in upper triangle $\begin{pmatrix} \text{No. tile DOF} & \times \\ \text{No. tile DOF} \end{pmatrix}$
	NPIRG			

Figure 4-1 Data Set Allocations

V. SUBPROGRAM CALLING SEQUENCE AND COMMON BLOCKS UTILIZED

The following table lists the subprograms that are called by each parent routine. The common blocks used in each routine are also tabularized. The subprograms listed under the "Calls" heading appear in the order in which they are called. The order of the subprograms listed in the "Subprogram" column corresponds to the order in which they appear in the FORTRAN listing. An alphabetical index which cross references this order-of-appearance number is provided in Section VI.

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
1	MAIN	----	TIMEA BIGBRD LDB EOF01 SAMAIN	CTAPES CTMH CLIST CIDIV CBYTES CORE UNCUTT
2	SAMAIN	MAIN	SETUP CARDIN MESH ELAS TIMEA PROCES INPUT SBMAIN	FILE MATRIX CTAPES RWO
3	SETUP	SAMAIN	----	DSRN UNITS MEMINF FILE MATRIX
4	CARDIN	SAMAIN	MPROP GEOBC MEMBIN LOADIN	CTAPES DIMEN MATRIX UNCUTT INFO AFLEX PROBSZ RWO
5	GEOBC	CARDIN	BRICK UNCUT PUTLAB PUTROW DCLOSE BOUND	FILE CTAPES SIZE KTAB MINBOF DIMEN MATRIX PROBSZ BRICKT UNCUTT
6	BRICK	GEOBC	----	MINBOF BRICKT DIMEN PROBSZ CTAPES
7	UNCUT	GEOBC	----	MINBOF UNCUTT DIMEN PROBSZ CTAPES

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
8	ROUND	GEOBC	----	CTAPES SIZE DIMEN PROBSZ KTAB AFLEX
9	MEMBIN	CARDIN	PUTLAB MEMGEN DCLOSE	FILE MATRIX PROBSZ SIZE DIMEN
10	MEMGEN	MEMBIN	PUTROW SQRT	MATRIX PROBSZ MINBOF INFO DIMEN
11	LOADIN	CARDIN	PUTLAB PUTROW DCLOSE	FILE CTAPES MINBOF SIZE PROBSZ CBYTES DIMEN INFO RWO MATRIX KTAB
12	MESH	SAMAIN	INTMP FTEMP PUTLAB MSHWRT DCLOSE	DIMEN INFO UNCUTT UNITS CTAPES MEMINF PANDR CBYTES LENGTH
13	MSHWRT	MESH	TINTER MATL PUTROW	CTAPES MEMINF PANDR TABIL INFO
14	MPROP	CARDIN	----	INFO TABIL DIMEN RWO CTAPES

NO.	SUBPROGRAM	CALLED FROM	CALLS	COMMON
15	MATL	MSHWRT	----	----
16	TINTER	MSHWRT	LAGRAN	TABIL CTAPES
17	LAGRAN	TINTER	----	----
18	INTEMP	MESH	----	TTAB CTAPES CELAS
19	FTEMP	MESH	TEMPER	TTAB CTAPES
20	TEMPER	FTEMP	TLGRN	TTAB
21	TLGRN	TEMPER	DLGRN LGRANG	TTAB
22	DLGRN	TLGRN	LGRANG	----
23	LGRANG	TLGRN DLGRN	----	----
24	COPY	SBMAIN HEXTIL	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
25	ELAS	SAMAIN	SLOAD FSAKG PARTIN QFACT	MEMINF UNITS PRINT CELAS LENGTH INFO PANDR PROBSZ FILE RWO
26	FMSTS	HEXEL	JACOB	----
27	FSAKG	ELAS	HEXEL PUTLAB PUTROW DCLOSE NSTAK RESTOR	MEMINF UNITS PRINT FILE
28	GAUSS	HEXEL	----	CTAPES

NO. ----	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
29	HEXEL	FSAKG	PUTLAB GETDIM GETROW GAUSS SHAPE JACOB QDST QDLN WRAKG ISTAK FMSTS PRITE WEND DCLOSE	INFO MEMINF UNITS CELAS PANDR
30	ISTAK	HEXEL	MSTAK PRITE WEND	MEMINF PRINT UNITS CELAS CTAPES
31	JACOB	HEXEL FMSTS	----	----
32	MSTAK	ISTAK	----	PRINT
33	NSTAK	FSAKG	PUTLAB GETDIM PREAD REND PACK PUTROW DCLOSE	UNITS PRINT
34	PARTIN	ELAS HEXTIL	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
35	QDLN	HEXEL	----	----
36	QDST	HEXEL	----	----
37	SHAPE	HEXEL	----	----
38	SLOAD	ELAS	----	MEMINF CELAS PRINT CTAPES
39	WRAKG	HEXEL	----	PRINT CTAPES MEMINF

NO. ----	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
40	PROCES	SAMAIN	GETDIM GETROW TITLES	JTAB FILE MATRIX PROBSZ CTAPES CLIST
41	INPUT	SAMAIN	GETDIM PUTLAB GETROW TITLES EL2 EL5 EL16 PLB DCLOSE	JTAB FILE MINBUF MATRIX PROBSZ DIMEN INFO CTAPES CLIST
42	SPLITS	EL2 EL5 EL16	FLXIBL ARACE EDGMAS PRINT3 PRITE WEND	JTAB MINBUF MATRIX PROBSZ INFO CTAPES CBYTES
43	EL2	INPUT	DSINF DCOSF DSQRTF SPLITS	MINBUF PROBSZ CTAPES INFO
44	EL5	INPUT	DSINF DABSF DCOSF DSQRTF SPLITS	MINBUF PROBSZ CTAPES INFO
45	EL15	EL16	DSQRTF	PROBSZ MINBUF ARRAYS STIFF CTAPES
46	EL16	INPUT	DSQRTF DABSF DCOSF DSINF EL15 SREVN2 SPLITS	PROBSZ MINBUF ARRAYS STIFF CTAPES INFO
47	SREVN2	EL16	DABSF	----
48	FLXIBL	SPLITS	----	AFLEX DIMEN

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
49	EDGMAS	SPLITS	----	AFLEX
50	ARACE	SPLITS	----	JTAB
51	PRINT3	SPLITS	PLB TITLES	CTAPES CLIST
52	SBMAIN	SAMAIN	ASTACK TIMEA QFACT MSTACK MPRINT BPMASS ALARM RESTOR GETDIM PUTLAB GETROW PUTROW DCLOSE LOCDEF MULT READMT ICMULT QFACT KMOSQ COPY QFSOL REVERS QBSOL ORTHOG MSOUT COMPAR PSTRES SORT	DSRN FILE MATRIX UNITS PROBSZ UNCUTT INFO RWO CTAPES CORE
53	ASTACK	SBMAIN	PUTLAB GETDIM PREAD REND PACK PUTROW DCLOSE	PROBSZ DIMEN INFO CTAPES CBYTES
54	MSTACK	SBMAIN	PUTLAB GETDIM PREAD REND PACK PUTROW DCLOSE	PROBSZ CTAPES CBYTES

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
55	BPMAS5	SBMAIN	GETDIM PREAD REND PUTLAB PUTROW DCLOSE	PROBSZ CBYTES
56	ALARM	SBMAIN	TITLES REVERS TRAN PUTLAB SCAPRO SQRT PUTROW DCLOSE QFSOL GETDIM GETROW MULT ABS AMAX1 AMIN1 STURM QSVEC2 MSOUT RDM	PROBSZ INFO FILE CTAPES CLIST
57	SCAPRO	ALARM	----	----
58	STURM	ALARM	ABS PREP	----
59	PREP	STURM	----	----
60	QSVEC2	ALARM	ABS AMAX1 SQRT RDM ANDOR DOTPRO	PATLYN
61	DOTPRO	QSVEC2	----	PATLYN
62	ANDOR	QSVEC2	----	----
63	RDM	ALARM QSVEC2	----	----
64	RESTOR	FSAKG SBMAIN	GETDIM GETROW PUTLAB PUTROW DCLOSE	CTAPES

NO. ----	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
65	MULT	SBMAIN ALARM HEXTIL	GETDIM GETROW PUTLAB ENMMPY PUTROW DCLOSE	CTAPES
66	ENMMPY	MULT	----	----
67	READMT	SBMAIN	GETDIM GETROW DCLOSE	----
68	ICMULT	SBMAIN HEXTIL	----	----
69	LOWTRI	SRMAIN HEXTIL	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
70	QFACT	ELAS SRMAIN PODSYM	GETDIM PUTLAB QCHOL DCLOSE	CTAPES CIDIV INFO
71	QCHOL	QFACT	TITLES GETROW UNPACK KPRINT HOTDOT PUTROW ALOG10 SORT ARS IABS	PROBSZ CTAPES RWO CLIST INFO
72	KPRINT	QCHOL	----	CTAPES
73	QPASS	QFSOL	GETROW	----
74	QFSOL	SRMAIN ALARM PODSYM	GETDIM PUTLAB QPASS DCLOSE QFOR IABS MAXO MINO	FILE MATRIX CTAPES CIDIV

NO.	SUBPROGRAM	CALLED FROM	CALLS	COMMON
75	QFOR	QFSOL	GETROW UNPACK HOTDOT PUTROW MAXO MINO	----
76	QBSOL	SBMAIN PODSYM	GETDIM PUTLAB QBAC DCLOSE IABS MAXO	CTAPES CIDIV
77	QBAC	QBSOL	GETROW UNPACK HOTDOT PUTROW	----
78	REVERS	SBMAIN ALARM PODSYM	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
79	TRAN	ALARM	GETDIM GETROW PUTLAB PUTROW DCLOSE	----
80	ORTHOG	SBMAIN	GETDIM GETROW SQRT PUTLAB PUTROW DCLOSE	----
81	LOCDEF	SBMAIN	GETDIM PUTLAB GETROW PUTROW DCLOSE DWRITE HEXTIL DREAD	DIMEN FILE CTAPES CLIST MATRIX UNITS RWO INFO

NO.	SUBPROGRAM	CALLED FROM	CALLS	COMMON
82	HEXTIL	LOCDEF	KMOSQ PARTIN COPY MULT LOWTRI SUB PODSYM MATB ADD GETDIM GETROW DCLOSE WRDSP ICMULT SRAIN2 SRAIN SRAIN3	MEMINF UNITS PRINT PANDR INFO RWO CTAPES FILE
83	KMOSQ	SBMAIN HEXTIL	GETDIM GETROW PUTLAB PUTROW DCLOSE	----
84	DSRN	SRAIN	----	----
85	SRAIN	HEXTIL	GETDIM GETROW DREAD PREAD REND DSRAN DCLOSE	UNITS CTAPES CELAS RWO
86	SRAIN2	HEXTIL	GETDIM GETROW	UNITS CTAPES CELAS RWO
87	SRAIN3	HEXTIL	GETDIM GETROW DCLOSE	UNITS CTAPES CELAS RWO
88	WRDSP	HEXTIL	----	MEMINF RWO CTAPES
89	PODSYM	HEXTIL	QFACT REVERS QFSOL QBSOL	----

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
90	ADD	HEXTIL	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
91	SUB	HEXTIL	GETDIM PUTLAB GETROW PUTROW DCLOSE	----
92	MATB	HEXTIL	GETDIM GETROW PUTLAB ENTMPY PUTROW DCLOSE	----
93	ENTMPY	MATB	----	----
94	PSTRES	SBMAIN	GETDIM GETROW DCLOSE	DIMEN FILE CTAPES RWO PROBSZ MATRIX
95	MSOUT	SBMAIN ALARM	GETDIM GETROW DCLOSE	MATRIX DIMEN CTAPES RWO FILE
96	COMPAR	SBMAIN	GETDIM GETROW DCLOSE ABS	CTAPES
97	MPRINT	SBMAIN	TITLES GETDIM GETROW UNPACK DCLOSE	CTAPES CLIST
98	HOTDOT	QCHOL QFOR QBAC	----	----

NO.	SUBPROGRAM	CALLED FROM	CALLS	COMMON
---	-----	-----	-----	-----
99	PUTLAB	PARTIN	DFIND	PUTGET
		MULT	DWRITE	FILE
		COPY		PROBSZ
		GEORC		CTAPES
		LOADIN		
		SBMAIN		
		QFSOL		
		REVERS		
		KMOSO		
		ALARM		
		FSAKG		
		ASTACK		
		NSTAK		
		ADD		
		MATB		
		RESTOR		
		QFACT		
		INPUT		
		MEMBIN		
		MESH		
		LOWTRI		
		QBSOL		
		TRAN		
		ORTHOG		
		BPMASS		
		MSTACK		
		LOCDEF		
		HEXEL		
		SUB		

NO. ----	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
100	PUTROW	PARTIN MULT COPY MEMGEN MSHWRT LOWTRI QBAC TRAN ORTHOG BPMASS MSTACK LOCDEF ADD MATB RESTOR QCHOL GEOBC LOADIN SBMAIN QFOR REVERS KMOSQ ALARM FSAKG ASTACK NSTAK SUP	DWRITE PACK UNPACK DCLOSE IABS	----

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
101	GETDIM	PARTIN MULT COPY INPUT LOWTRI OBSOL TRAN READMT PSTRES ALARM MSTACK LOCDEF HEXEL HEXTIL ADD SUR SRIN2 RESTOR QFACT PROCES SRMAIN QFSOL REVERS KMOSQ ORTHOG MPRINT BPMASS ASTACK NSTAK MSOUT COMPAR SRIN MATB SRIN3	DFIND DREAD	PUTGET FILE PROBSZ CTAPES

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
102	GETROW	PARTIN MULT COPY INPUT LOWTRI QFOR REVERS KMOSQ ORTHOG MPRINT LOCDEF MSOUT COMPAR SRAIN MATB SRAIN3 RESTOR QCHOL PROCES SBMAIN QPASS QBAC TRAN READMT PSTRES ALARM HEXEL HEXTIL ADD SUB SRAIN2	DREAD UNPACK PACK IABS	----
103	PRITE	SPLITS HEXEL ISTAK	PUT	----
104	DWRITE	PUTLAB PUTROW LOCDEF	PUT	----
105	PUT	PRITE DWRITE	----	----
106	PREAD	MSTAK NSTAK BPMAS ASTACK SRAIN	GET	----
107	DREAD	GETDIM GETROW LOCDEF SRAIN	GET	----

NO. ---	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
108	GET	PREAD DREAD	----	----
109	WEND	SPLITS HEXEL ISTAK	----	----
110	REND	MSTAK NSTAK BPMASS ASTACK SRAIN	----	----
111	DFIND	PUTLAB GETDIM	----	----
112	DCLOSE	PARTIN MULT PUTROW INPUT MEMBIN MESH LOWTRI QBSOL TRAN READMT PSTRES ALARM FSAKG ASTACK NSTAK MSOUT COMPAR SRAIN MATR RESTOR QFACT COPY GEOBC LOADIN SBMAIN QFSOL REVERS KMOSQ ORTHOG MPRINT RPMASS MSTACK LOCDEF HEXEL HEXTIL ADD SUR SRAIN3	----	----

NO. ----	SUBPROGRAM -----	CALLED FROM -----	CALLS -----	COMMON -----
113	PACK	PUTROW GETROW ASTACK MSTACK NSTAK	----	----
114	UNPACK	PUTROW GETROW QCHOL QFOR QRAC MPRINT	MINO	----
115	LDB	MAIN	EOF01 PLB	----
116	PLB	TITLES INPUT LDB TIMEA PRINT3	----	----
117	EOF01	MAIN LDB	----	----
118	TITLES	TIMEA INPUT MPRINT QCHOL PROCES PRINT3 ALARM	PLB	CTMH CLIST CTAPES
119	RIGPRD	MAIN	----	CTAPES
120	TIMEA	MAIN SAMAIN SBMAIN	TITLES PLB	CTAPES CLIST PROBSZ
121	DARSF	EL5 EL16 SREVN2	ARS	----
122	DCOSF	EL2 EL5 EL16	COS	----
123	DSINF	EL2 EL5 EL16	SIN	----
124	DSORTF	EL2 EL5 EL15 EL16	SORT	----

VI. BRIEF DESCRIPTION OF SUBPROGRAMS

An alphabetical and numerical index, cross-referencing the 124 subprograms contained in RESIST, appears in Figure 6-1. A brief description of each subprogram is also presented in the order in which it appears in the FORTRAN program.

Subprogram	Order*	Subprogram	Order*	Subprogram	Order*	Subprogram	Order*	Subprogram	Order*
ALPHABETICAL LISTING OF SUBROUTINES									
ADD	090	ALARM	056	ANDOR	062	ARACE	050	ASTACK	053
BIGBRD	119	BOUND	008	BPMASS	055	BRICK	006	CARDIN	004
COMPAR	096	COPY	024	DABSF	121	DCLOSE	112	DCOSF	122
DFIND	111	DLGRN	022	DOTPRO	061	DREAD	107	DSINF	123
DSQRTF	124	DSRAN	084	DWRITE	104	EDGMAS	049	FLAS	025
EL15	045	EL16	046	EL2	043	EL5	044	ENMMPY	066
ENTMPY	093	EOF01	117	FLXIBL	048	FMSTS	026	FSAKG	027
FTEMP	019	GAUSS	028	GE0BC	005	GET	108	GETDIM	101
GETROW	102	HEXEL	029	HEXTIL	082	HOTDOT	098	ICMULT	068
INPUT	041	INTEMP	018	ISTAK	030	JACOB	031	KMOSO	083
KPRINT	072	LAGRAN	017	LDB	115	LGRANG	023	LOADIN	011
LOCDEF	081	LOWTRI	069	MAIN	001	MATB	092	MATL	015
MEMBIN	009	MEMGEN	010	MESH	012	MPRINT	097	MPROP	014
MSHWRT	013	MSOUT	095	MSTACK	054	MSTAK	032	MULT	065
NSTAK	033	ORTHOG	080	PACK	113	PARTIN	034	PLB	116
PODSYM	089	PREAD	106	PREP	059	PRINT3	051	PRITE	103
PROCES	040	PSTRES	094	PUT	105	PUTLAB	099	PUTROW	100
QBAC	077	QBSOL	076	OCHOL	071	QDLD	035	QDST	036
QFACT	070	QFOR	075	QFSOL	074	QPASS	073	QSVEC2	060
RDM	063	READMT	067	REND	110	RESTOR	064	REVERS	078
SAMAIN	002	SBMAIN	052	SCAPRO	057	SETUP	003	SHAPE	037
SLOAD	038	SPLITS	042	SRAIN	085	SRAIN2	086	SRAIN3	087
SREVN2	047	STURM	058	SUB	091	TEMPER	020	TIMEA	120
TINTER	016	TITLES	118	TLGRN	021	TRAN	079	UNDCUT	007
UNPACK	114	WEND	109	WRAKG	039	WRDSP	088		
NUMERICAL INDEX									
MAIN	001	SAMAIN	002	SETUP	003	CARDIN	004	GE0BC	005
BRICK	006	UNDCUT	007	BOUND	008	MEMBIN	009	MEMGEN	010
LOADIN	011	MESH	012	MSHWRT	013	MPROP	014	MATL	015
TINTER	016	LAGRAN	017	INTEMP	018	FTEMP	019	TEMPER	020
TLGRN	021	DLGRN	022	LGRANG	023	COPY	024	ELAS	025
FMSTS	026	FSAKG	027	GAUSS	028	HEXEL	029	ISTAK	030
JACOB	031	MSTAK	032	NSTAK	033	PARTIN	034	QDLD	035
QDST	036	SHAPE	037	SLOAD	038	WRAKG	039	PROCES	040
INPUT	041	SPLITS	042	EL2	043	EL5	044	EL15	045
EL16	046	SREVN2	047	FLXIBL	048	EDGMAS	049	ARACE	050
PRINT3	051	SBMAIN	052	ASTACK	053	MSTACK	054	BPMASS	055
ALARM	056	SCAPRO	057	STURM	058	PREP	059	QSVEC2	060
DOTPRO	061	ANDOR	062	RDM	063	RESTOR	064	MULT	065
ENMMPY	066	READMT	067	ICMULT	068	LOWTRI	069	QFACT	070
QCHOL	071	KPRINT	072	QPASS	073	QFSOL	074	QFOR	075
QBSOL	076	QBAC	077	REVERS	078	TRAN	079	ORTHOG	080
LOCDEF	081	HEXTIL	082	KMOSO	083	DSRAN	084	SRAIN	085
SRAIN2	086	SRAIN3	087	WRDSP	088	PODSYM	089	ADD	090
SUB	091	MATB	092	ENTMPY	093	PSTRES	094	MSOUT	095
COMPAR	096	MPRINT	097	HOTDOT	098	PUTLAB	099	PUTROW	100
GETDIM	101	GETROW	102	PRITE	103	DWRITE	104	PUT	105
PREAD	106	DREAD	107	GET	108	WEND	109	REND	110
DFIND	111	DCLOSE	112	PACK	113	UNPACK	114	LDB	115
PLB	116	EOF01	117	TITLES	118	BIGBRD	119	TIMEA	120
DABSF	121	DCOSF	122	DSINF	123	DSQRTF	124		
*Order in which subprogram appears in program									

Fig. 6-1 Subprogram Nomenclature and Numerical Index

DESCRIPTION OF SUBROUTINES

- 1 MAIN - Initializes input/output variables.
- 2 SAMAIN - Supervisor that calls all input data processing and iteration routines.
- 3 SETUP - Assigns input/output unit and file numbers.
- 4 CARDIN - Prints problem options and calls data generation and pre-processing routines.
- 5 GEOBC - Writes primary structure coordinates and boundary condition on data set.
- 6 BRICK - Generates primary structure coordinates corresponding to brick tile configuration.
- 7 UNDCUT - Generates primary structure coordinates corresponding to undercut tile configuration.
- 8 BOUND - Generates primary structure boundary conditions.
- 9 MEMBIN - Picks out nodes corresponding to each primary structure element.
- 10 MEMGEN - Stores all material property information and nodes for each primary structure element on the data set.
- 11 LOADIN - Reads in primary structure mechanical and thermal loading data (for statics problems only). Generates applied load matrix.
- 12 MESH - Generates nodal geometry for brick and undercut tiles. Prints coordinates, element and node maps if requested.
- 13 MSHWRT - Generates material properties for the elements and stores them, along with geometry, on the data set.
- 14 MPROP - Reads in material property data for primary structure elements, tile arrestor, isolator and RSI and prints them.
- 15 MATL - Stores material property data for tiles in matrix form to be used in stiffness matrix calculations.

- 16 TINTER - Calls the Lagrangian interpolation routine for temperature dependent material properties of tiles.
- 17 LAGRAN - Performs Lagrangian interpolation of tile material property tables.
- 18 INTEMP - Reads in data for the static thermal loading of tiles via one of three options - uniform temperature, Lagrangian interpolation or element node temperature.
- 19 FTEMP - Determines tile nodal temperatures.
- 20 TEMPER - Determines whether or not x, y, z coordinate arguments are located within the interpolation tables.

- 21 TIGRN - Performs three dimensional Lagrangian interpolation.
- 22 DIGRN - Performs two dimensional Lagrangian interpolation.
- 23 IGRANG - Performs single argument Lagrangian interpolation.
- 24 COPY - Copies a matrix from one data set to another.
- 25 ELAS - Supervises the tile stiffness matrix generation.
- 26 FMSTS - Forms the strain matrix for the tile element centroid.
- 27 FSAKG - Supervises the formation and stacking of the tile element stiffness matrices.
- 28 GAUSS - Forms Gaussian integration table for 2 thru 6 points.
- 29 HEXEL - Generates tile element stiffness and load matrices and supervises their stacking.
- 30 ISTAK - Writes tile element stiffness and load matrices with their stacking indices on data set.
- 31 JACOB - Forms Jacobian and its inverse.
- 32 MSTAK - Returns stacking index for tile element stiffness matrix.
- 33 NSTAK - Stacks total tile stiffness matrix and load vector.
- 34 PARTIN - Partitions out specified rows of tile stiffness or load matrices.
- 35 QDLD - Forms quadrilateral (coating) load matrix.
- 36 QDST - Forms quadrilateral (coating) element stiffness matrix.
- 37 SHAPE - Contains the hexahedron shape function.

- 38 SLOAD - Writes tile load vector if requested.
- 39 WRAKG - Prints tile element stiffness matrices if requested.
- 40 PROCES - Keeps a running total on the number of primary structure degrees of freedom at each node and prints them out, along with nodal coordinates.
- 41 INPUT - Calls the appropriate finite element subroutine to calculate individual primary structure element stiffness matrices. Also used for mass matrices in vibration problems.
- 42 SPLITS - Computes stacking indices and band-widths for primary structure element stiffness and mass matrices.
- 43 EL2 - Generates beam finite element stiffness and mass matrices in global coordinates.
- 44 EL5 - Generates global stiffness and TPS mass matrices for a planar isotropic quadrilateral membrane finite element.
- 45 EL15 - Generates stiffness matrix in global coordinates for triangular plate bending finite element.
- 46 EL16 - Generates element stiffness and mass matrices for qualrilateral bending element. It calls EL15 four times to assemble four triangles into a "quad" with interior degrees of freedom included which are subsequently condensed out of local stiffness matrix before transformation to global coordinates.
- 47 SREVN2 - Obtains inverse of small order matrix through Gauss-Jordan elimination scheme with partial pivoting and stores it in the position of the original matrix.
- 48 FLXIBL - When the primary structure has flexible boundary conditions, this routine identifies the appropriate boundary elements and modifies the corresponding finite element stiffness-matrices to include the effects of the flexible boundaries.
- 49 EDGMAS - Adds overhung rotatory mass item into beam mass matrix of elements on A and B edge of primary structure.
- 50 ARACE - Eliminates rows and/or columns of primary structure element stiffness or mass matrices, according to boundary conditions associated with element.

- 51 PRINT3 - Prints all primary structure stiffness and mass matrices, if requested.
- 52 SBMAIN - Controls whole iterative procedure of the program including: primary structure matrix stacking, equation solution routines, approximate frequency and mode shape calculations, convergence criteria tests and final printout of stresses.
- 53 ASTACK - Reads element stiffness matrices and associated stacking indices from data set and stacks them into total primary structure stiffness matrix.
- 54 MSTACK - Reads element mass matrices and associated stacking indices from data set and stacks them into total primary structure mass matrix.
- 55 BPMASS - Reads element mass matrices and associated stacking indices from data set and stacks only those associated with plates and beams into total primary structure diagonal mass matrix.
- 56 ALARM - Automatically reduces size of a vibration problem and computes approximate frequencies and mode shapes.
- 57 SCAPRO - Accumulates products of row and column elements of matrices.
- 58 STURM - Applies bisection technique to obtain eignvalues of a real symmetric tri-diagonal matrix.
- 59 PREP - Provides routine STURM with critical information for location and number of roots.
- 60 QSVEC2 - Computes unit eigenvector of matrix, given diagonal and off-diagonal entries of this Householder tri-diagonal matrix and a good approximate root.
- 61 DOTPRO - Calculates "dot" product of two vectors.
- 62 ANDOR - Logical "and" function and logical "or" function.
- 63 RDM - Generates random numbers uniformly distributed between 0 and 1.
- 64 RESTOR - Generates symmetric matrix from its lower triangle.
- 65 MULT - Controls manipulation of two matrices on data sets which are to be multiplied together in packed form and stores the result on a third data set.
- 66 ENMPY - Multiplies two matrices stored in core to produce partial product of two larger matrices which do not fit in core.

- 67 READMT - Reads column vector from data set into core.
- 68 ICMULT - Multiplies adjacent elements of two column vectors and sums results to form scalar quantity.
- 69 LOWTRI - Generates lower triangle from full matrix stored on data set.
- 70 QFACT - Reads positive definite symmetric stiffness matrix from data set and sets up indices for subroutine QCHOL to get lower triangle of an LL^T decomposition one row at a time.
- 71 QCHOL - Performs Cholesky factorization of stiffness matrix.
- 72 KPRINT - Prints non-zero elements of lower triangular primary structure stiffness matrix.
- 73 QPASS - Reads over required number of rows of lower triangle decomposition of stiffness matrix to aid in zoning for forward solution of system of equations.
- 74 QFSOL - Sets up and manages zoning for forward solution of $L^T X = L^{-1}Y = Z$, using L and Y and getting Z.
- 75 QFOR - Computes forward solution of $L^{-1} Y = Z$.
- 76 QBSOL - Sets up and manages zoning for backward solution of $L^T X = Z$ to obtain X.
- 77 QBAC - Computes backward solution of $L^T X = Z$.
- 78 REVERS - Reverses order of rows of matrix on data set when matrix will not fit in core.
- 79 TRAN - Computes transpose of matrix which is stored on data set and will not fit in core.
- 80 ORTHOG - Normalizes elements of column vector.
- 81 LOCDEF - Determines primary structure nodes and deflections associated with boundary nodes of each tile and generates new global load vector upon completion of tile analysis.
- 82 HEXTIL - Controls partitioning of tile stiffness and load matrices, solution of equations, computation of tile portion of Rayleigh Quotient and calculation of tile stresses and strains.

- 83 KMOSQ - Computes $K - \omega^2 M$ for tiles and primary structure.
- 84 DSRAN - Calculates tile member stresses and strains.
- 85 SRAIN - Computes and prints stresses and direct strains for each tile.
- 86 SRAIN 2 - Computes and prints stresses for each tile isolator and arrestor.
- 87 SRAIN 3 - Computes and prints stresses and total strains for coating for each tile.
- 88 WRDSP - Prints TPS displacements for each tile.
- 89 PODSYM - Calls equation solving routines in appropriate order.
-
- 90 ADD - Adds two matrices stored on data sets which may not fit in core and stores result on third data set.
- 91 SUB - Subtracts two matrices stored on data sets which may not fit in core and stores result on third data set.
- 92 MATB - Controls manipulation of matrices A and B which are read from data sets, zones arrays to calculate $A^T B$ and stores result on third data set.
- 93 ENTMPY - Multiplies two matrices stored in core to produce partial product $A^T B$ of two larger matrices A and B which do not fit in core.
- 94 PSTRES - Calculates and prints plate strains and stresses if requested.
- 95 MSOUT - Prints primary structure deflections at each node.
- 96 COMPAR - Computes maximum deflection, minimum deflection difference and maximum convergence parameter between iterations.
- 97 MPRINT - Prints non-zero elements of lower-triangular primary structure mass matrix.
- 98 HOTDOT - Forms inner product of two vectors.
- 99 PUTIAB - Puts label on data set containing matrix dimensions and prints out label information, if requested.
- 100 PUTROW - Writes row of matrix on data set in format designated by packing factor.
- 101 GETDIM - Gets label of matrix from data set and prints out label information, if requested.

- 102 GETROW - Reads row of matrix from data set in format designated by packing factor.
- 103 PRITE - Converts number of bytes in array into words by dividing by four.
- 104 DWRITE - Converts number of bytes in array into words by dividing by four.
- 105 PUT - Writes singly dimensioned array onto data set.
- 106 PREAD - Converts number of bytes in array into words by dividing by four.
- 107 DREAD - Converts number of bytes in array into words by dividing by four.
- 108 GET - Reads singly dimensioned array from data set.
- 109 WEND - Called at end of a series of PRITE'S.
- 110 REND - Called at end of a series of PREAD'S.
- 111 DFIND - Rewinds data set to appropriate file.
- 112 DCLOSE - Rewinds data set.
- 113 PACK - Packs rows of matrix so they may be written on a data set in an efficient manner. This is done by representing strings of zeroes by a single fixed point negative integer where the value of the integer represents the number of zeroes in the string. Non-zero numbers are preceded by a fixed point number indicating the number of non-zero numbers that follow.
- 114 UNPACK - Unpacks rows of matrices that have been packed by subroutine PACK.
- 115 LDB - Reads and lists input data from input stream and generates data file for user's program.
- 116 PLB - Starts a new page and/or skips a number of lines.
- 117 EOF01 - Checks for an end of file on input data set unit, sets end of file control word option to its proper value and reads a two card problem title.
- 118 TITLES - Prints title at top of page.
- 119 BIGBRD - Prints RESIST title sheet before program output.
- 120 TIMEA - Calculates and lists computer time at desired intervals within program.
- 121 DABSF - Takes absolute value of floating point number.

- 122 DCOSF - Computes cosine of floating point argument.
- 123 DSINF - Computes sine of floating point argument.
- 124 DSQRTF - Computes square root of positive floating point number.

VII. TYPICAL SUBPROGRAM OUTPUT

The following listings display subprogram output for two problem types with all the debugging clues turned on. One execution is for a statics option problem and the second is for a dynamics option problem. The name of the particular subprogram which generated each set of output is printed in bold type on the rotated right hand side of each photographed computer page.

STATICS AND DYNAMICS

[illegible]

THE LANGLEY RESEARCH CENTER

.....1.....2.....3.....4.....5.....6.....7.....8
123456789012345678901234567890123456789012345678901234567890

STATICS PROBLEM FOR PROGRAMMERS MANUAL
SEPTEMBER 5, 1974

SEPTEMBER 5, 1974

	1	.05	7
SEPTEMBER 29, 1964			
1			

[illegible]

.....1.....2.....3.....4.....5.....6.....7.....8
123456789012345678901234567890123456789012345678901234567890

CARDIN

O P T I O N S

STATICS PROBLEM

MAXIMUM NO. ITERATIONS = 1

CONVERGENCE PARAMETER = 5.0000E-02

PRIMARY STRUCTURE STRESSES PRESENTED AFTER EACH ITERATION AT PLATE MID, TOP AND BOTTOM SURFACES

TILES ON PRIMARY STRUCTURE

TILE STRESSES PRESENTED AFTER EACH ITERATION

TILE NODE MAP REQUIRED

TILE ELEMENT MAP REQUIRED

TILE NODE COORDINATES REQUIRED

PRINT ELEMENT STIFFNESS MATRICES

PRINT ASSEMBLED STIFFNESS MATRICES

PRINT FILE DEBUGGING INFORMATION

COMPUTE STRESSES FOR ALL TILES

CARDIN

GEOMETRY

PLATE

 LX = 1.0000E 01 LY = 5.0000E 00 TP = 2.5000E-01
 STRINGERS

 Y1 = 0.0 ZS = 5.0000E-01 YS = 5.0000E 00 AS = 1.0000E-01
 IV1 = 1.0000E-04 IZ1 = 1.0000E-04 JX1 = 5.0000E-04 BETA S = 0.0
 TILES

 NX8 = 2 NY8 = 1
 T = 0.0 T2 = 2.0000E 00
 TA = 1.0000E 00 T1 = 1.0000E-01 TC = 1.0000E-02
 NR1 = 0 NR2 = 1 ND2 = 1
 NT1 = 0 NT2 = 1

MPROP

MATERIAL PROPERTIES

PLATE

 EP = 1.0000E 07 NU P = 3.0000E-01 GAMMA P = 1.0000E-02 ALPHA P = 0.0
 STRINGERS

 ES = 1.0000E 07 NU S = 3.0000E-01 GAMMA S = 1.0000E-01 ALPHA S = 0.0
 ARRESTOR

 EX = 6.0000E 04 EV = 6.0000E 04 EZ = 6.0000E 03
 OR RST

 NU XY = 5.0000E-01 NU YZ = 1.0000E-01 NU ZX = 1.0000E-02
 GXY = 2.0000E 04 GYZ = 3.2000E 04 GTX = 3.2000E 04
 GAMMA A = 5.0000E-03
 ALPHA X = 0.0 ALPHA Y = 0.0 ALPHA Z = 0.0
 ISOLATOR

 ET = 9.0000E 01 NU I = 4.9000E-01 GAMMA I = 3.5000E-02 ALPHA I = 0.0
 RST

 GAMMA R = 5.0000E-03
 ALPHA RY / ALPHA RX = 0.0 ALPHA RZ / ALPHA RX = 0.0

TEMPERATURE DEPENDENT MATERIAL PROPERTIES

MPROP

	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY
1	ER	ALL	6.000E 04					
1	ER	ALL	6.000E 03					
1	GR	ALL	3.200E 04					
1	NU R	ALL	5.000F-01					
1	NU R	ALL	1.000E-02					
1	ALPHA R	ALL	0.0					
1	EC	ALL	1.200E 07					
1	NU C	ALL	2.500F-01					
1	ALPHA C	ALL	0.0					

FROM PUTLAB,

NAME = GEOMETRY, I/O UNIT = 10, FILE = 1, ROWS = 13, COLUMNS = 5

GEOBC

BOUND

BOUNDARY CONDITIONS

STRINGERS

FREE

FREE

FREE

FREE

FREE

V HELD, U FREE

GEOBC

MEMBIN/MEMGEN

FROM PUTLAB,
NAME = 8ND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM PUTLAB,
NAME = MEMBERS, I/O UNIT = 17, FILE = 1, ROWS = 6, COLUMNS = 100

LOADIN

STATIC LOADING

NYX = 0.0

V = 0.0

NY = 0.0

NY = 0.0

M = 0.0

T = 0.0

DEL TEMP S = 0.0

DEL TEMP P = 0.0

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 4, FILE = 1, ROWS = 6, COLUMNS = 6

INTEMP

R S I T E M P E R A T U R E S

NO STATIC THERMAL LOADING

UNIFORM TEMPERATURE OPTION

T REFERENCE = 0.0

DEL T U = T - T REF = 0.0

FROM PUTLAB,

NAME = QB HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

MESH/MSHWRT

MESH

N O D E M A P

SURFACE 1

14 16

13 15

MESH

N O D E M A P

SURFACE 2

10 12

9 11

MESH

N O D E M A P

S U R F A C E 3

6 8

5 7

MESH

E L E M E N T M A P

LAYER 1
RST

3

MESH

E L E M E N T M A P

LAYER 3
ISOLATOR

1

MESH

TILE MESH ELEMENT	TILE	NODES
1	1 3	2 4 6 8
2	5 7	10 12
3	9 11	14 16

5
7
9
11
13
15

NODE	LOCAL TILE COORDINATES			TEMPERATURE	MESH
	X	Y	Z		
1	0.0	0.0	0.0	0.0	
2	0.0	5.00000E 00	0.0	0.0	
3	5.00000E 00	0.0	0.0	0.0	
4	5.00000E 00	5.00000E 00	0.0	0.0	
5	0.0	0.0	1.00000E-01	0.0	
6	0.0	5.00000E 00	1.00000E-01	0.0	
7	5.00000E 00	0.0	1.00000E-01	0.0	
8	5.00000E 00	5.00000E 00	1.00000E-01	0.0	
9	0.0	0.0	1.10000E 00	0.0	
10	0.0	5.00000E 00	1.10000E 00	0.0	
11	5.00000E 00	0.0	1.10000E 00	0.0	
12	5.00000E 00	5.00000E 00	1.10000E 00	0.0	
13	0.0	0.0	3.10000E 00	0.0	
14	0.0	5.00000E 00	3.10000E 00	0.0	
15	5.00000E 00	0.0	3.10000E 00	0.0	
16	5.00000E 00	5.00000E 00	3.10000E 00	0.0	

LOAD VECTOR DUE TO APPLIED LOAD FOR

1. APPLIED NODAL CONCENTRATED LOADS
2. SURFACE TRACIONS FOR HEXAHEDRA ELEMENTS

[illegible]

FROM PUTLAR,

NAME = A0 AG-56, I/O UNIT = 12, FILE = 1, ROWS = 3, COLUMNS = 1

FROM PUTLAB,

NAME = A0 AG-56, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1

FROM GETD IM,

NAME = :QB HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

HEXEL/ISTAK

HEXEL

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 1 - 6

8.5637012E	02	1.25933714E	01	6.2918506E	02	4.2769213E	02	-1.2080360E	01	3.1459253E	02
1.2583714E	01	8.5637012E	02	6.2919530E	02	1.2080367E	01	4.0251489E	02	6.0401758E	02
6.2918506E	02	6.2918530E	04	4.2785305E	04	1.3459277E	02	-6.0401782E	02	2.1392125E	04
4.2769213E	02	1.2080362E	01	3.1459277E	02	8.5637012E	02	1.25933714E	01	6.2913506E	04
1.1.2080360E	01	1.2080360E	02	-6.0401782E	02	-1.2583714E	01	8.5637012E	02	-6.2918530E	04
6.2918506E	02	4.0251489E	02	2.1392125E	04	6.2918506E	04	6.2918530E	02	4.2785305E	04
-4.4.1535034E	02	6.0401793E	03	3.020854E	02	-8.3019429E	02	-6.2918549E	02	6.0401688E	02
-3.3.1459253E	02	4.2793408E	02	6.2918457E	04	6.2919539E	00	-8.3019629E	02	-6.0401660E	04
-3.3.1459253E	02	-6.2918530E	02	-2.1392387E	04	-6.0401758E	02	6.0401758E	02	-4.2784320E	04
-3.3.1459253E	02	6.2918530E	04	6.0401685E	02	-4.1535034E	02	-6.0401783E	00	3.020830F	02
-6.6.1401773E	00	-6.2918530E	02	6.0401685E	02	4.2784320E	04	-4.2793408E	02	6.2918457E	04
-6.6.1401773E	00	-6.0401782E	02	-6.0401685E	02	-3.020830F	02	6.2918555E	02	-2.1392387E	04
4.0251440E	02	1.2080363E	01	-6.0401758E	02	2.010589E	02	1.2583717E	01	-3.0700879E	02
1.2080360E	01	4.2768188E	02	3.1459253E	02	1.2583714E	01	2.010589E	02	3.020854E	04
6.0401758E	02	3.1459277E	02	2.1392117E	04	3.020854E	04	3.020903E	02	1.0659824E	04
2.010587E	02	-1.2593371E	01	3.020879E	02	4.0251416E	02	1.203036E	01	-6.0401733E	02
-1.1.2593371E	01	2.010587E	02	-3.020879E	02	-1.2080361E	01	4.2768164E	02	-3.1459253E	04
3.020854E	02	3.020854E	02	1.0659820E	04	6.0401733E	02	-3.1459253E	02	2.1392125E	04
-6.2918510E	00	6.2918510E	00	3.1459229E	02	-2.2793311E	02	6.0401764E	00	-6.2918433E	02
-2.1409299E	00	-2.1409299E	02	3.1459229E	02	-6.0401764E	00	4.1534937E	02	-3.0700830E	02
-3.1459253E	02	3.1459253E	02	1.06596297E	04	6.2918506E	02	3.020854E	02	-2.1392387E	04
-6.0401783E	02	-6.0401783E	00	6.2918457E	02	-2.1409299E	02	6.2918530E	00	-3.1459229E	02
4.1534961E	02	4.1534961E	02	3.020830F	02	6.2918510E	00	-2.1409299E	02	3.1459229E	02
-3.020879E	02	-3.020879E	02	-2.1392367E	04	3.1459229E	04	3.1459277E	01	1.06596301E	04

FLEXURE STIFFNESS MATRIX FOR MEMBER 1												
COLUMNS			7-12									
2	-6.0401773E	00	-3.0200879E	02	-4.3019629E	02	6.2918520E	00	-6.0401782F	02		
3	-4.2793408E	02	-6.2918530E	00	-8.3019629E	02	-6.0401782F	02				
4	-2.918457E	02	-2.1392738E	04	-6.0401685E	02	6.0401685E	02	-4.2784320E	04		
5	-6.2918539E	00	-6.0401758E	02	-4.15535034E	02	6.0401793E	00	-3.0700879E	02		
6	-8.3019629E	02	6.0401758E	02	-6.0401783E	00	-4.2793408E	02	6.2918555E	02		
7	-4.2784320E	04	-3.0200830E	02	6.2918457E	02	2.1392738E	04				
8	-6.0401660E	02	-5.2918481E	01	-2.030159E	01	7.1459229E	02				
9	-1.2593713E	01	6.2918481E	02	-1.2080356E	01	4.0251489E	02	6.0401709E	02		
10	8.5637036E	01	-2.785313E	04	-3.1459204E	02	-6.0401660E	02	2.1392125E	04		
11	-6.2918481E	02	6.2918481E	02	8.5637085E	02	1.2583709E	01	8.5637085E	02		
12	-1.2080356E	01	-3.1459204E	02	-8.5637085E	02	1.2583709E	01	8.5637085E	02		
13	4.0251489E	02	-6.0401660E	02	1.2583709E	01	8.5637085E	02	-6.2918506E	02		
14	-6.0401709E	02	2.1392125E	04	-6.2918506E	02	-6.2918506E	02	4.2785320E	04		
15	6.2918549E	02	3.1459277E	02	-4.2793384E	02	-6.0401793E	00	6.2918555E	02		
16	-2.1409314E	02	-3.1459253E	02	-6.0401764E	02	-4.1535010E	02	-3.0200933E	02		
17	3.1459229E	02	-1.0696305E	04	6.2918457E	02	3.0200830E	02	-2.1392407E	04		
18	-6.0401773E	00	6.2918530E	00	-2.1409314E	02	-6.2918520E	00	3.1459277E	02		
19	-4.1534961E	02	3.0200879E	02	-6.2918510E	00	-2.1409314E	02	3.1459277E	02		
20	-3.0200830E	02	-2.1392738E	04	3.1459229E	02	3.1459229E	02	1.0696305E	04		
21	1.2080356E	01	6.0401660E	02	2.0100597E	02	-1.2543709E	01	3.0700854E	02		
22	4.2768091E	02	3.1459229E	02	-1.2543709E	01	2.0100597E	02	3.0700854E	02		
23	-6.0401636E	02	2.1392125E	04	-3.0200830E	02	-3.0200830E	02	1.0695820E	04		
24	1.2583713E	01	3.0200879E	02	4.0251440E	02	-1.2080360E	01	6.0401685E	02		
25	2.1000594E	02	-3.070084E	02	1.2080353E	01	4.2768164E	02	3.1459253E	02		
26	-3.0200854E	02	1.0695820E	04	-6.0401636E	02	-3.1459229E	02	2.1392133E	04		

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 13-18

4.0251440E 02	1.2080360E 01	6.0401758E 02	2.0100587E 02	-1.2583714E 01	3.0200830E 02
-1.2080363E 01	4.2768188E 02	3.1459277E 02	-1.2583716E 01	2.0100587E 02	3.0200830E 02
-6.0401758E 02	3.1459253E 02	2.1392117E 04	-3.0200879E 02	-3.0200879E 02	1.0695820E 04
2.3100589E 02	1.2583714E 01	3.0200854E 02	4.0251416E 02	-1.2080361E 01	6.0401733E 02
1.2583717E 01	2.0100589E 02	-3.0200903E 02	1.2080363E 01	4.2768164E 02	-3.1459253E 02
-3.0200879E 02	3.0200854E 02	1.0695824E 04	-6.0401733E 02	-3.1459253E 02	2.1392125E 04
-2.1409314E 02	6.2918501E 00	3.1459229E 02	4.2793335E 02	-6.0401754E 00	6.2918457E 02
6.2918549E 02	-2.1409314E 02	-3.1459253E 02	6.0401733E 02	-4.1534937E 02	-3.0200830E 02
3.1459277E 02	-3.1459253E 02	-1.0696305E 04	6.2918530E 02	3.0200879E 02	-2.1392387E 04
-4.2793384E 02	6.0401764E 00	6.2918457E 02	-2.1409314E 02	-6.2918510E 00	3.1459229E 02
-6.0401733E 02	-4.1535010E 02	3.0200830E 02	-6.2918520E 02	3.1459277E 02	3.1459229E 02
6.2918555E 02	-3.0200903E 02	-2.1392402E 04	3.1459277E 02	-3.1459277E 02	-1.0696305E 04
8.5637036E 02	-1.2583716E 01	-6.2918555E 02	4.2768164E 02	1.2080363E 01	-3.1459253E 02
-1.2583716E 01	8.5637036E 02	6.2918530E 02	-1.2080362E 01	4.0251440E 02	6.0401758E 02
-6.2918555E 02	6.2918530E 02	4.2785332E 04	-3.1459229E 02	2.1392133E 04	2.1392133E 04
4.2768164E 02	-1.2080362E 01	-3.1459229E 02	8.5637012E 02	1.2583714E 01	-6.2918481E 02
1.2080363E 01	4.0251440E 02	-6.0401733E 02	1.2583714E 01	8.5637012E 02	-6.2918506E 02
-3.1459253E 02	6.0401758E 02	7.1392133E 04	-6.2918481E 02	-6.2918506E 02	4.2785329E 04
-4.1534937E 02	-6.0401726E 02	-3.0200806E 02	-8.3019604E 02	6.2918472E 00	-6.0401636E 02
6.0401773E 00	-4.2793311E 02	-6.2918433E 02	6.2918501E 00	-8.3019604E 02	-6.0401636E 02
3.0200879E 02	-6.2918530E 02	-7.1392381E 04	6.0401685E 02	-6.0401733E 02	-4.2784332E 04
-8.3019629E 02	-6.2918510E 00	-6.0401660E 02	-4.1534937E 02	6.0401764E 00	-3.0200830E 02
-6.2918530E 02	-8.3019629E 02	6.0401636E 02	-6.0401754E 00	-4.2793311E 02	6.2918433E 02
6.0401733E 02	-6.0401733E 02	-4.2784320E 04	3.0200854E 02	6.2918506E 02	-2.1392383E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 19-24

-2.1409299E 02	-6.2918520E 00	-3.1459229E 02	-4.2793335E 02	6.0401764E 00	-6.2918506E 02
-5.2918510E 00	-2.1409299E 02	-3.1459253E 02	-6.0401783E 00	-4.1534961E 02	-1.0700879E 02
-3.1459229E 02	-3.1459229E 02	-1.0696297E 04	-6.2918457E 02	3.0200830E 02	-2.1392367E 04
-4.2793311E 02	-6.0401764E 00	-6.2918506E 02	-2.1409299E 02	6.2918510E 00	-3.1459229E 02
6.0401764E 00	-4.1534937E 02	3.0200854E 02	6.2918530E 02	-2.1409299E 02	3.1459277E 02
-6.2918433E 02	-3.0200830E 02	-2.1392375E 04	-3.1459229E 02	3.1459229E 02	-1.0696301E 04
4.0251392E 02	-1.2080356E 01	-5.0401636E 02	2.0100594E 02	1.2583709E 01	-3.0200830E 02
1.2080356E 01	4.2768091E 02	3.1459204E 02	1.2583713E 01	2.0100595E 02	3.0200854E 02
6.0401660E 02	3.1459229E 02	7.1392129E 04	3.0200879E 02	-3.0200854E 02	1.0695820E 04
2.0100597E 02	-1.2583706E 01	-3.0200830E 02	4.0251440E 02	1.2080353E 01	-6.0401636E 02
-1.2583709E 01	2.0100597E 02	-3.0200830E 02	-1.2080360E 01	4.2768164E 02	-3.1459229E 02
3.0200854E 02	3.0200854E 02	1.0695820E 04	6.0401685E 02	-3.1459253E 02	2.1392133E 04
-4.1534937E 02	6.0401773E 00	3.0200879E 02	8.3019629E 02	-6.2918530E 00	6.0401733E 02
-6.0401726E 00	-4.2793311E 02	-6.2918530E 02	-6.2918510E 00	-8.3019629E 02	-6.0401733E 02
-3.0200806E 02	-6.2918433E 02	-2.1392383E 04	-6.0401660E 02	6.0401636E 02	-4.2784320E 04
-8.3019604E 02	6.2918501E 00	6.0401685E 02	-4.1534937E 02	-6.0401754E 00	3.0200854E 02
6.2918472E 00	-8.3019604E 02	6.0401733E 02	6.0401764E 00	-4.2793311E 02	6.2918506E 02
6.3401636E 02	-6.0401636E 02	-4.2784332E 04	3.0200830E 02	6.2918433E 02	-2.1392383E 04
8.5636963E 02	1.2583703E 01	6.2918408E 02	4.2768091E 02	-1.2080350E 01	3.1459204E 02
1.2583703E 01	8.5636963E 02	6.2918433E 02	1.2080357E 01	4.0251367E 02	6.0401636E 02
6.2918408E 02	6.2918433E 02	4.2785309E 04	3.1459229E 02	-6.0401636E 02	2.1392121E 04
4.2768091E 02	1.2080357E 01	3.1459229E 02	8.5636963E 02	-1.2583711E 01	6.2918457E 02
-1.2080350E 01	4.0251367E 02	-6.0401636E 02	-1.2583711E 01	8.5636963E 02	-6.2918433E 02
3.1459204E 02	6.0401636E 02	2.1392121E 04	6.2918457E 02	-6.2918433E 02	4.2785293E 04

ISTAK

ELMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER 1

1	3.5637012F 02	2	1.2583714E 01	3	8.5617012F 02	4	6.2918506E 02	5	6.2918530F 02	6	4.2785305E 04
7	4.2769213E 02	8	1.2080362E 01	9	3.1459277F 02	10	8.5637012F 02	11	1.2080360F 01	12	4.0251489E 02
13	-6.0401782E 02	14	-1.2583714E 01	15	8.5637012E 02	16	3.1459253E 02	17	6.0401758E 02	18	2.1392125E 04
19	6.2918506E 02	20	-6.2918530E 02	21	4.2785305E 04	121	-4.1535034F 02	122	6.0401793E 00	123	3.0200854E 02
124	-3.3019629F 02	125	-6.2918549E 00	126	6.0401685E 02	136	8.5637061E 02	137	-6.0401773E 00	138	-4.2793408E 02
139	-6.2918457E 02	140	-6.2918539E 00	141	-9.3019629E 02	142	-6.0401660F 02	152	1.2583713F 01	153	8.5637036E 02
154	-3.0200879E 02	155	-6.2918530E 02	156	-2.1392125E 02	157	-6.0401758E 02	158	6.0401758E 02	159	-4.2784320E 04
169	-6.2918481E 02	170	6.2918481E 02	171	4.2785313E 04	179	-8.3019629E 02	80	6.2918530E 00	81	6.0401685E 02
82	-4.1535034E 02	83	-6.0401783E 00	84	3.0200830F 02	133	4.2768213F 02	149	-1.2080356E 01	156	-3.1459204E 02
91	8.5637085E 02	92	6.2918520F 02	93	-8.3019629E 02	94	6.0401695E 02	95	6.0401793E 00	96	-4.2793408E 02
97	6.2918457E 02	134	1.2080359E 01	150	4.0251489E 02	167	-6.0401660F 02	104	1.2583709F 01	105	8.5637085E 02
106	-6.0401782E 02	107	-6.0401782E 02	108	-4.2784320F 04	109	-3.0200879E 02	110	6.2918555E 02	111	-2.1392387E 04
135	-3.1459229E 02	151	6.0401709E 02	168	-2.1392125E 04	118	-6.2918506E 02	119	-6.2918506E 02	120	4.2785320E 04
22	4.0251440E 02	23	-1.2080363E 01	24	-5.0401758E 02	25	2.0100589E 02	26	1.2583717E 01	27	-3.0200879E 02
127	-2.1409314E 02	143	6.2918549E 00	160	3.1459277F 02	85	-4.279338F 02	98	-6.0401793E 00	112	6.2918555E 02
28	8.5637036E 02	29	1.2080360E 01	30	4.2768188E 02	31	3.1459253E 02	32	1.2583714F 01	33	2.0100589E 02
34	3.0200854E 02	128	6.2918501E 02	144	-2.1409314E 02	161	-3.1459253E 02	86	6.0401764E 00	99	-4.1535010E 02
113	-3.0200903E 02	35	-1.2583716F 01	36	8.5637036E 02	37	6.0401758E 02	38	3.1459277E 02	39	2.1392117F 04
40	3.0200854E 02	41	-3.0200903E 02	42	1.0695924F 04	129	3.1459225E 02	145	-3.1459253E 02	167	-1.0695905E 04
87	6.2918457E 02	100	3.0200830F 02	114	-2.1392125F 04	43	-6.2918555E 02	44	6.2918530E 02	45	4.2785332E 04
46	2.0100587E 02	47	-1.2583716F 01	48	-3.0200879E 02	49	4.0251416E 02	50	1.2080363E 01	51	-6.0401733E 02
60	-4.2793335E 02	146	6.0401773E 00	163	6.2918550E 02	88	-2.1409314E 02	101	-6.2918520F 00	115	3.1459277E 02
52	4.2768164E 02	53	-1.2080362E 01	54	-3.1459229E 02	55	5.637012E 02	56	-1.2583714E 01	57	2.0100587E 02
58	-3.0200879E 02	59	-1.2080361E 01	60	4.2768164E 02	61	-3.1459253E 02	62	-6.0401754E 00	147	-4.1535061E 02
164	3.0200879E 02	89	-6.2918501E 02	102	-2.1409314E 02	116	3.1459277E 02	62	1.2080363E 01	63	4.0251440E 02
64	-6.0401733E 02	65	1.2583714E 01	66	9.5637012E 02	67	3.0200830F 02	68	3.0200854F 02	69	1.0695820E 04
70	6.0401733E 02	71	-3.1459253E 02	72	2.1392125F 04	132	6.2918457E 02	148	-3.0200830F 02	165	-2.1392387E 04
90	3.1459229E 02	103	3.1459229E 02	117	-1.0696305E 04	73	-3.1459253E 02	74	6.0401758E 02	75	2.1392133E 04
76	-6.2918431E 02	77	-6.2918506E 02	78	4.2785328E 04	232	-2.1409299E 02	233	-6.2918510E 00	234	-3.1459229E 02
235	-4.2793311F 02	236	6.0401764E 00	237	-6.2918433F 02	247	4.0251392F 02	248	1.2080356E 01	249	6.0401660E 02
244	2.0100597E 02	245	-1.2583709E 01	246	3.0200854F 02	238	-4.1534937E 02	239	-6.0401725E 00	240	-3.0200806E 02
241	-3.3019604E 02	242	6.2918472E 00	243	-6.0401636F 02	253	8.5636961E 02	254	-6.2918520E 00	255	-2.1409299E 02
256	-3.1459229E 02	257	-6.0401764E 00	258	-4.1534937E 02	259	-3.0200830F 02	269	-1.2080356E 01	270	4.2768091F 02
271	3.1459229E 02	266	-1.2583706E 01	267	2.0100597E 02	268	3.0200854E 02	260	6.0401773E 00	261	-4.2793311E 02
262	-6.2918433E 02	263	6.2913501E 00	264	-9.3019604E 02	265	-6.0401636E 02	275	1.2583703E 01	276	8.5636987E 02
277	-3.1459229E 02	278	-3.1459253E 02	279	-1.0696297E 04	280	-6.2918506E 02	281	3.0200854E 02	282	-2.1392375E 04
292	-6.0401636E 02	293	3.1459204E 02	294	2.1392129E 04	289	-3.0200830E 02	290	-3.0200830E 02	291	1.0695820E 04
283	3.0200879E 02	284	-6.2918530E 02	285	-2.1392383F 04	286	6.0401685E 02	287	6.0401733E 02	288	-4.2784332E 04
298	6.2918408E 02	299	6.2918433F 02	300	4.2785309E 04	172	-4.2793335E 02	173	-6.0401783F 00	174	-6.2918457E 02
175	-1.2080360E 01	176	6.2918530E 02	177	-3.1459229E 02	187	2.0100594F 02	183	1.2583713F 01	189	3.0200879E 02
184	4.0251440E 02	185	-1.2080360E 01	186	6.0401685E 02	178	-8.3019629E 02	179	-6.2918510E 00	180	-6.0401660E 02
181	-4.1534937E 02	182	6.0401764E 00	183	-3.0200830F 02	250	4.2768091E 02	272	1.2080357E 01	295	-3.1459229E 02
190	9.5636963E 02	191	6.0401764E 00	192	-4.1534961E 02	193	3.0200830E 02	194	6.2918510E 00	195	-2.1409299E 02
196	1.1459229F 02	206	1.2583709E 01	207	2.0100595E 02	208	-3.0200854F 02	203	1.2080353F 01	204	4.2768164E 02
205	-3.1459253E 02	197	-6.2918530E 00	198	-9.3019629E 02	199	6.0401636E 02	200	-6.0401754E 00	201	-4.2793311E 02
202	6.2918433E 02	251	-1.2080350E 01	273	4.0251367E 02	296	-6.0401636E 02	209	-1.2583711E 01	210	8.5636987E 02
211	-6.2918506E 02	212	-3.0200879E 02	213	-2.1392129E 04	214	-3.1459229E 02	215	3.1459277E 02	216	-1.0696301E 04
226	-3.0200830E 02	227	3.0200854E 02	228	1.0695920F 04	223	-6.0401636E 02	224	-3.1459229E 02	225	2.1392133F 04
217	6.0401733E 02	218	-6.0401733E 02	219	-4.2784320F 04	220	3.0200854F 02	221	6.2918506E 02	222	-2.1392383E 04
252	3.1459204E 02	274	6.0401636F 02	297	2.1392121E 04	229	6.2918457E 02	230	-6.2918433E 02	231	4.2785293E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS

1-6

1.0035581E 05	5.5264766E 03	1.5297844E 04	4.5844590E 04	-2.1931641E 03	7.6489219E 03
5.5264766E 03	1.0138294E 05	1.7204641E 04	2.1931646E 03	3.5283172E 04	-9.4618945E 03
1.5297844E 04	1.7204641E 04	2.6371676E 04	7.6489219E 03	9.4618945E 03	7.8525000E 03
4.6844590E 04	2.1931646E 03	7.6489219E 03	1.0035575E 05	-5.5264727E 03	1.5297844E 04
-2.1931641E 03	3.5283172E 04	9.4618945E 03	-5.5264727E 03	1.0138288E 05	-1.7204641E 04
7.6489219E 03	-9.4618945E 03	7.8525000E 03	1.5297844E 04	1.7204641E 04	2.6371676E 04
-4.3244105E 04	1.0965818E 03	-5.6843438E 04	-1.7204633E 04	-2.7632400E 03	-1.1368691E 04
-1.0965818E 03	-5.6843438E 04	-1.7204633E 04	-8.3154813E 04	-8.2641250E 04	9.4618945E 03
5.6843320E 03	1.7204641E 04	-1.0519156E 04	1.1368684E 04	-9.4618945E 03	1.5705055E 04
-8.1154875E 04	2.7632390E 03	-1.1368691E 04	-4.3244109E 04	1.0965818E 03	-5.6843438E 04
2.7632390E 03	-8.2641313E 04	-9.4618945E 03	1.0965818E 03	-4.9074824E 04	1.7204637E 04
1.1368680E 04	9.4618945E 03	-1.5705059E 04	5.6843281E 03	1.7204637E 04	-1.0519156E 04
3.6310273E 04	-2.1931653E 03	1.1368695E 04	1.6484466E 04	5.5264766E 03	5.6843359E 03
-2.1931638E 03	4.7358148E 04	8.6023164E 03	5.5264766E 03	1.5974898E 04	-4.7309492E 03
-1.1368688E 04	8.6023125E 03	7.8525039E 03	-5.6843438E 03	4.7309414E 03	1.2596174E 03
1.648469E 04	-5.5264727E 03	5.6843359E 03	3.6310281E 04	2.1931648E 03	1.1368695E 04
-5.5264727E 03	1.5974898E 04	4.7309453E 04	-2.1931648E 03	4.7358156E 04	-8.6023086E 03
-5.6843438E 03	-4.7309453E 04	1.2596191E 03	-1.1368688E 04	-8.6023086E 03	7.8524961E 03
-2.5088926E 04	-2.7632395E 03	-7.6489180E 03	-4.8511242E 04	1.0965806E 03	-1.5297852E 04
-2.7632388E 03	-2.5345711E 04	-8.6023125E 03	-1.0965818E 03	-4.2987316E 04	4.7309453E 04
-7.6489141E 03	-8.6023086E 03	-6.5929102E 03	-1.5297840E 03	-4.7309375E 03	-1.0519145E 04
-4.8511234E 04	-1.0965808E 03	-1.5297848E 04	-2.5088926E 04	2.7632395E 03	-7.6489180E 03
1.0965815E 03	-4.2987305E 04	-4.7309492E 03	2.7632390E 03	-2.5345707E 04	8.6023164E 03
-1.5297844E 04	4.7309414E 03	-1.0519152E 04	-7.6489180E 03	8.6023047E 03	-6.5929102E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS

7-12

-4.3244105E 04	-1.0965811E 03	5.6843320E 03	-8.3154875E 04	2.7632390E 03	1.1368680E 04
1.0965818E 03	-4.9024824E 04	-1.7204641E 04	2.7632390E 03	-8.2641313E 04	9.4618945E 03
-5.6843438E 03	-1.7204633E 04	-1.0519156E 04	-1.1363691E 04	-9.4618945E 03	-1.5705059E 04
-8.1154813E 04	-2.7632397E 03	1.1368684E 04	-4.3244109E 04	1.0965818E 03	5.6843281E 03
-2.7632400E 03	-8.2641250E 04	-9.4618945E 03	-1.0965811E 03	-4.9074824E 04	1.7204637E 04
-1.1368691E 04	9.4618945E 03	-1.5705055E 04	-5.6843438E 03	1.7204637E 04	-1.0519156E 04
1.035575E 05	-5.5264570E 03	-1.5297848E 04	4.6844594E 04	2.1931655E 03	-7.6489141E 03
-5.5264570E 03	1.0138294E 05	1.7204637E 04	-2.1931621E 03	3.5283156E 04	-9.4618906E 03
-1.5297848E 04	1.7204637E 04	2.6371684E 04	-7.6489180E 03	9.4618945E 03	7.8525195E 03
4.6844594E 04	-2.1931621E 03	-7.6489180E 03	1.0035588E 05	5.5264570E 03	-1.5297848E 04
2.1931655E 03	3.5283156E 04	9.4618945E 03	5.5264570E 03	1.0138300E 05	-1.7204645E 04
-7.6489141E 03	-9.4618906E 03	7.8525195E 03	-1.5297848E 04	1.7204645E 04	2.6371680E 04
-2.5088941E 04	-2.7632397E 03	7.6489102E 03	-4.9511281E 04	-1.0965815E 03	1.5297848E 04
2.7632395E 03	-2.5345723E 04	-8.6023086E 03	1.0965808E 03	-4.2987352E 04	4.7309414E 03
7.6489258E 03	-8.6023125E 03	-6.5929141E 03	1.5297848E 04	-4.7309492E 03	-1.0519160E 04
-4.8511262E 04	1.0965806E 03	1.5297844E 04	-2.5088945E 04	-2.7632390E 03	7.6489063E 03
-1.0965813E 03	-4.2987332E 04	-4.7309375E 03	-2.7632388E 03	2.5345727E 04	8.6023047E 03
1.5297844E 04	4.7309453E 03	-1.0519152E 04	7.6489258E 04	-6.5929141E 03	-1.1368691E 04
3.6310289E 04	2.1931633E 03	-1.1368676E 04	1.6484496E 04	-5.5264531E 03	-5.6843320E 03
-2.1931655E 03	4.7358168E 04	8.6023047E 03	-5.5264570E 03	1.5974926E 04	-4.7309414E 03
1.1368676E 04	8.6023047E 03	7.8525078E 03	5.6843359E 03	4.7309492E 03	1.2596208E 03
1.6488484E 04	-5.6844570E 03	-5.6843359E 03	3.6310305E 04	-2.1931638E 03	-1.1368680E 04
5.5264609E 03	1.5974918E 04	4.7309453E 03	2.1931641E 03	4.7358180E 04	-8.5023047E 03
5.6843359E 03	-4.7309453E 03	1.2596189E 03	1.1368680E 04	-8.6023086E 03	7.8525156E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 13-18

3.6310273E 04	2.1931638E 03	-1.1368688E 04	1.6488469E 04	-5.5264727E 03	-5.6843438E 03
-2.1931653F 03	4.7358148E 04	9.6023125E 03	-5.5264727E 03	1.5974895E 04	-4.7309453F 03
1.1368695E 04	8.6023164F 03	7.8525039F 03	5.6843359F 03	4.7309453F 03	1.2596191E 03
1.6488465F 04	5.5264766E 03	-5.6843438E 03	3.6310281E 04	-2.1931648E 03	-1.1368688E 04
5.5264766E 03	1.5974898E 04	4.7309453F 03	2.1931648E 03	4.7358156F 04	-8.6023086E 03
5.6843359E 04	-4.7309492F 03	1.2596174E 03	1.1368695E 04	-8.6023086E 03	7.8524961E 03
-2.5089941F 04	2.7632395F 03	7.6489258E 03	-4.8511262E 04	-1.0965813E 03	1.5297844E 04
2.7632395F 03	-2.5345723F 04	-3.6023125E 03	1.0965806E 03	-4.7309453F 03	4.7309453F 03
7.6489102E 04	4.7309492F 03	-6.5292141E 03	1.5297844E 04	-4.7309375E 03	-1.0519152E 03
-1.0965815F 03	-4.2987352F 04	-4.7309492E 03	-2.7632390F 03	-2.5345727E 04	8.5023164E 03
1.5297848E 04	4.7309414F 03	-1.0519160E 04	7.6489263F 04	8.6023047E 03	-7.6489180E 03
1.0035575E 05	-5.5264668E 03	1.5297963E 04	4.6844613F 04	2.1931658E 03	-7.6489180E 03
-5.5264668E 03	1.0138288E 05	1.7204637E 04	-2.1931646E 03	3.5283184E 04	-9.4618906E 03
4.6844613F 04	-2.1931646E 03	2.6371676E 04	1.0035563E 05	5.5264668E 03	7.8525000F 03
2.1931658F 03	3.5283184E 04	9.4618945E 03	5.5264668E 03	1.0138281E 05	-1.7204637E 04
-7.5489180F 03	-9.4618906F 03	7.8525000F 03	-1.5297852F 04	-1.7204637E 04	2.6371677E 04
-4.3244109F 04	-1.0965798E 03	5.6843438E 03	-8.3154688E 04	2.7632383F 03	1.1368688E 04
1.0965820E 03	-4.9024828E 04	-1.7204629E 04	2.7632388E 03	-8.2641063F 04	9.4618906E 03
-5.6843281E 03	-1.7204633E 04	-1.0519145E 04	-1.1368672E 04	-9.4618906E 03	-1.5705055E 04
-9.3154750F 04	-2.7632395E 03	1.1368688E 04	-4.3244113F 04	1.0945806E 03	5.6843398F 03
-2.7632400F 03	-8.2641125E 04	-9.4618906F 03	-1.0945806E 03	-4.9024832F 04	1.7204629F 04
-1.1368630F 04	9.4618945F 03	-1.5705051F 04	-5.6843320F 03	1.7204625F 04	-1.0519145F 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 19-24

-2.5088926E 04	-2.7632388E 03	-7.6489141F 03	-4.8511234E 04	1.0965815E 03	-1.5297844F 04
-2.7632395F 03	-2.5345711F 04	-8.6023086E 03	-1.0965808E 03	-4.2987305E 04	4.7309414F 03
-7.6489180F 03	-8.6023125F 03	-6.5929107E 03	-1.5297848F 04	-4.7309492F 03	-1.0519152E 04
-4.3511242E 04	-1.0965818E 03	-1.5297840E 04	-2.5088926E 04	2.7632390E 03	-7.6489180F 03
1.0965806F 03	-4.2987316F 04	-4.7309375E 03	2.7632395E 03	-2.5345707E 04	8.5023047E 03
-1.5297852F 04	4.7309453E 03	-1.0519145E 04	-7.6489180E 03	8.6023164E 03	-6.5929107E 03
3.6310289E 04	-2.1931655E 03	1.1368676E 04	1.6488484F 04	5.5264609E 03	5.6843359F 03
2.1931633E 03	4.7358168E 04	8.6023047E 03	5.5264570E 03	1.5974918E 04	-4.7309453F 03
1.6488467E 04	-5.5264570E 03	7.8525078E 03	-5.6843359E 03	4.7309453F 03	1.2596199E 03
1.6488496F 04	-5.5264570E 03	5.6843359F 03	3.6310305E 04	2.1931641E 03	1.1368690F 04
-5.5264531E 03	1.5974926F 04	4.7309492E 03	-2.1931638E 03	-4.7358180E 04	-8.6023086F 03
-5.6843320E 03	-4.7309414E 03	1.2596208E 03	-1.1368680E 04	-8.6023047E 03	7.8525156E 03
-4.3244109F 04	1.0965820F 03	-5.6843281E 03	-8.3154750E 04	-2.7632400E 03	-1.1368690E 04
-1.0965798E 03	-4.9024828F 04	-1.7204633E 04	-2.7632395F 03	-8.2641125E 04	9.4618945E 03
5.6843438E 03	-1.7204629E 04	-1.0519145E 04	1.1368688E 04	-9.4618906E 03	-1.5705051F 04
-8.3154688E 04	2.7632388E 03	1.1368672E 04	-4.3244113E 04	1.0965806E 03	-5.6843320F 03
1.7632383F 03	-8.2641063E 04	-9.4618906F 03	1.0965806F 03	-4.9024832E 04	1.7204625F 04
1.1368688E 04	9.4618906F 03	-1.5705055E 04	5.6843398F 04	1.7204629E 04	-1.0519145F 04
1.0035550E 05	5.5264531E 03	1.5297836E 04	4.6844586E 04	-2.1931631F 03	7.6489102E 03
5.5264531E 03	1.0138269E 05	1.7204625E 04	2.1931658E 03	3.5283160E 04	-9.4618929E 03
1.5297836E 04	1.7204625E 04	2.6371564F 04	7.6489102E 03	9.4618867E 03	7.8525039E 03
4.6844586F 04	2.1931658E 03	7.6489102E 03	1.0035556E 05	-5.5264531E 03	1.5297848E 04
-2.1931631F 03	3.5283160F 04	9.4618867E 03	-5.5264531F 03	1.0138269E 05	-1.7204629E 04
7.6489102E 03	-9.4618828E 03	7.8525039E 03	1.5297848F 04	-1.7204625E 04	2.6371656E 04

ISTAK

2

ELEMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER

2

91	1.0035581E 05	104	5.5264766E 03	105	1.0138294E 05	118	1.5297844E 04	119	1.7204641E 04	120	2.6371676E 04
133	4.6844590E 04	134	2.1931646E 03	135	7.6489219E 03	136	1.0035575E 05	149	-2.1931641E 03	150	3.5283172E 04
151	9.4618945E 03	152	-5.5264727E 03	153	1.0138288E 05	166	7.0489219E 03	167	-9.4618945E 03	168	7.8525000E 03
169	1.5297844E 04	170	-1.7204641E 04	171	2.6371677E 04	381	-4.3244105E 04	382	1.0965818E 03	383	-5.6843438E 03
384	-8.3156813E 04	385	-2.7632400E 03	386	-1.1368691E 04	396	1.0035575E 05	404	-4.9024824E 04	405	-4.9024824E 04
406	-1.7204633E 04	407	-2.7632397E 03	408	-8.2641250E 04	409	9.4618945E 03	419	-5.5264570E 03	420	1.0138294E 05
427	5.6843320E 03	428	-1.7204641E 04	429	-1.0519156E 04	430	1.1368684E 04	431	-9.4618945E 03	432	-1.5705055E 04
442	-1.5297844E 04	443	1.7204637E 04	444	2.6371684E 04	312	-8.3154875E 04	313	-2.7632390E 03	314	-1.1368691E 04
315	-4.3244109E 04	316	-1.0965811E 03	317	-5.6843438E 03	393	4.6844594E 04	416	-2.1931621E 03	439	-7.6489180E 03
324	1.0035588E 05	335	2.7632390E 03	336	-8.2641313E 04	337	-9.4618945E 03	338	1.0965818E 03	339	-4.9024824E 04
340	1.7204637E 04	394	2.1931655E 03	417	3.5283176E 04	440	9.4618945E 03	347	5.5264570E 03	348	1.0138300E 05
358	1.1368680E 04	359	9.4618945E 03	360	-1.5705059E 04	361	5.6843291E 03	362	1.7204637E 04	363	1.0519156E 04
395	-7.6489141E 03	418	-9.4619006E 03	441	7.8525195E 03	370	-1.5297844E 04	371	-1.7204645E 04	372	2.6371680E 04
184	3.6310273E 04	185	-2.7632397E 03	186	1.1368695E 04	187	1.6488465E 04	188	5.5264766E 03	189	5.6843359E 03
387	-2.5088941E 04	410	2.7632397E 03	433	7.6489102E 03	318	-4.8511281E 04	341	-1.0965815E 03	364	1.5297848E 04
190	1.0035575E 05	203	2.1931638E 03	204	4.7358148E 04	205	8.6023164E 03	206	5.5264766E 03	207	1.5974898E 04
208	-4.7309492E 03	388	2.7632395E 03	411	-2.5345723E 04	434	-8.6023086E 03	319	1.0965808E 03	342	-4.2987352E 04
365	4.7309414E 03	209	-5.5264588E 03	210	1.0138288E 05	223	-1.1368688E 03	224	8.6023125E 03	225	7.8525039E 03
226	-5.6843438E 03	227	4.7309414E 03	228	1.2596174E 03	399	7.6489258E 03	412	-8.6023125E 03	435	-6.5920141E 03
320	1.5297849E 04	343	-4.7309492E 03	366	-1.0519160E 04	229	-1.5297843E 04	230	1.7204637E 04	231	2.6371676E 04
244	1.6489469E 04	245	-5.5264727E 03	246	5.6843359E 03	247	3.6310281E 04	248	2.1931648E 03	249	1.1368695E 04
390	-4.8511262E 04	413	1.0965806E 03	436	1.5297844E 04	321	-2.5088945E 04	344	-2.7632390E 03	367	7.6489063E 03
250	4.6844613E 04	251	-2.1931646E 03	252	-7.6489219E 03	253	1.0035583E 05	266	-9.4618945E 03	267	1.5974895E 04
268	4.7309453E 03	322	-2.7632388E 03	345	-2.5345727E 04	271	-8.6023047E 03	272	2.1931659E 03	273	3.5283184E 04
437	-4.7309375E 03	327	4.7309414E 03	276	1.0138281E 05	289	-5.6843438E 03	290	-4.7309453E 03	291	1.2596191E 03
274	9.4618945E 03	275	5.5264688E 03	294	7.8525291E 03	392	1.5297844E 04	415	4.7309453E 03	438	-1.0519152E 04
292	-1.1368688E 04	293	-8.6023086E 03	369	-6.5920141E 03	295	-7.6489180E 03	296	-9.4618945E 03	297	7.8525000E 03
323	7.6489258E 03	346	8.6023164E 03	300	2.6371672E 04	519	-2.5088926E 04	520	-2.7632395E 03	521	-7.6489180E 03
298	-1.5297852E 04	299	-1.7204637E 04	524	-1.5297852E 04	534	3.6310289E 04	535	2.1931633E 03	536	-1.1368676E 04
527	-4.8511242E 04	528	1.0965806E 03	533	-5.6843320E 03	525	-4.3244109E 04	526	-1.0965798E 03	527	5.6843438E 03
531	1.6489496E 04	532	-5.5264531E 03	530	1.1368688E 04	540	1.0035550E 05	542	-2.7632388E 03	543	-2.5345711E 04
528	-3.1546688E 04	529	2.7632383E 03	546	-4.2987316E 04	547	4.7309453E 03	557	-2.1931655E 03	558	4.7358168E 04
544	-3.6073125E 03	545	-1.0965818E 03	555	1.5974926E 03	556	-4.7309414E 03	548	1.0965820E 03	549	-4.9024828E 04
559	8.6073047E 03	554	-5.5264570E 03	552	-8.2641043E 04	553	9.4618945E 03	563	5.5264531E 03	564	1.0138269E 05
550	-1.7204629E 04	551	2.7632388E 03	567	-5.5929102E 03	568	-1.5297840E 04	569	-4.7309375E 03	570	-1.0519145E 04
565	-7.6489141E 03	566	-8.6023086E 03	581	8.6023047E 03	582	7.8525078E 03	574	-1.1368672E 04	575	-1.5705055E 04
580	1.1368676E 04	581	8.6023047E 03	572	-1.7204633E 04	573	-1.0519145E 04	576	-1.5705055E 04	577	1.2596208E 03
571	-5.6843291E 03	572	-1.7204625E 04	588	2.6371664E 04	450	-4.8511234E 04	451	-1.0965808E 03	452	-1.5297848E 04
586	1.5297836E 04	434	2.7632395E 03	455	-7.6489180E 04	465	1.6488464E 04	466	5.5264570E 03	467	-5.6843359E 03
453	-2.5088926E 04	463	-2.1931638E 03	464	-1.1368680E 04	456	-8.3154750E 04	457	-2.7632395E 03	458	1.1368688E 04
462	3.6310305E 04	460	1.0965806E 03	461	5.6843398E 03	537	4.6844594E 04	560	2.1931659E 03	583	7.6489102E 03
459	-4.3244113E 04	473	1.0965815E 03	474	-4.2987305E 04	475	-4.7309492E 03	476	2.7632390E 03	477	-2.5345707E 04
468	1.0035556E 05	478	5.5264509E 03	489	1.5974918E 04	490	4.7309453E 03	485	2.1931641E 03	486	4.7358180E 04
487	-8.6073047E 03	479	-2.7632400E 03	480	-8.2641125E 04	481	-9.4618945E 03	482	-1.0965806E 03	483	-4.9024832E 04
484	1.7204629E 04	538	-2.1931631E 03	561	3.5283160E 04	584	9.4618867E 03	491	-5.5264531E 03	492	1.0138269E 05
496	-1.5297844E 04	497	4.7309414E 03	498	-1.0519152E 04	508	-1.1368680E 04	509	-8.6023086E 03	510	-6.5929102E 03
511	5.6843359E 03	512	-4.7309453E 03	513	1.2596189E 03	508	1.1368680E 04	509	-8.6023086E 03	510	-6.5929102E 03
502	-1.1368680E 04	503	9.4618945E 03	504	-1.5705051E 03	504	-5.6843320E 04	506	1.7204625E 04	507	-1.0519145E 04
539	7.6489102E 03	562	-9.4618828E 03	585	7.8525039E 03	514	1.5297848E 04	515	-1.7204625E 04	516	2.6371656E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 1-6

6.6719875F 04	1.0040113F 04	1.3835266E 04	2.6693289E 04	-3.3734800E 03	6.9176367E 03
1.0040113F 04	6.6719875F 04	1.3835277E 04	3.3734724E 03	6.6130664E 03	-1.2831266E 04
1.3835266E 04	1.3835277E 04	2.2588902E 04	6.9176367E 03	1.2831270F 04	6.2783447E 02
2.6693289F 04	3.3734724E 03	6.9176367E 03	6.6719875E 04	-1.0040113F 04	1.3835266E 04
-3.3734800E 03	6.6130664E 03	1.2831270F 04	-1.0040113F 04	6.6719875F 04	-1.3835277E 04
6.9176367E 03	1.2831266E 04	6.2783447E 02	1.3835266E 04	1.3835277E 04	2.2588902E 04
-1.9886500E 04	1.6867412E 03	-6.4156328E 03	1.3306395E 04	-5.0700547E 03	-1.2831262E 04
-1.6867395F 03	-3.0026613F 04	1.3835281E 04	-5.0200547E 03	-3.37306391E 04	1.2831270E 04
6.4156211F 03	-1.3835270F 04	-5.9611445E 03	1.2831258E 04	-1.2831258E 04	-1.2556753E 03
3.3306393F 04	5.0200547E 03	-1.2831266E 04	1.9886500E 04	1.6867400E 03	-6.4156328E 03
5.0200547F 03	-3.3306395E 04	-1.2831270F 04	1.6867397E 03	-3.0026613F 04	1.3835281E 04
1.3831258F 03	1.2831262F 04	-1.2556753E 03	6.4156172E 03	1.3835266E 04	-5.9611445E 03
3.3734758E 03	2.6693297F 04	6.9176328F 03	1.0040113E 04	-2.6778564E 01	-6.4156328E 03
-1.2831258E 04	6.9176289E 04	6.2783228E 02	-6.4156328E 03	6.4156289E 03	-5.0193945E 03
-2.6775879F 01	-1.0040113E 04	6.4156250F 03	6.6130625F 03	3.3734797F 03	1.2831270F 04
-1.0040117E 04	-2.6776123F 01	6.4156289F 03	-3.3734778E 03	2.6693293E 04	-6.9176328E 03
-6.4156328F 03	-6.4156289E 03	-5.0193906E 03	-1.2831258E 04	-6.9176328E 03	6.2783545E 02
-6.679945F 04	-5.0200547E 03	-6.9176289E 03	-3.0026598E 04	1.6867390E 03	-1.3335277E 04
-5.0200547F 03	-1.6679957F 04	-6.9176289E 03	-1.6867402F 03	-1.9986488E 04	6.4156328E 03
-6.9176250F 03	-6.9176289E 03	-5.6472189E 03	-1.3835262F 04	-6.4156172F 03	-5.9611328F 03
-3.0026602F 04	-1.6867407E 03	-1.3835277E 04	-1.6679957F 04	5.0200586E 03	-6.9176289E 03
1.6867393E 03	-1.9986480E 04	-6.4156328E 03	5.0200508E 03	-1.6679953E 04	6.9176289E 03
-1.3835270E 04	6.4156211F 03	-5.9611367E 03	-6.9176289E 03	6.9176250E 03	-5.6472188E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 7-12

-1.9986500E 04	-1.6867385F 03	6.4156211E 03	-3.3306399E 04	5.0200547E 03	1.2831258E 04
1.5867412E 03	-3.0026613F 04	-1.3835270E 04	5.0200547E 03	-3.3306395E 04	1.2831262E 04
-6.4156328E 03	-1.3835281E 04	-5.9611445E 03	-1.2831266E 04	-1.2831270F 04	-1.2556753E 03
-3.3306395E 04	-5.0200547F 03	1.2831258E 04	-1.9986500E 04	1.6867397E 03	6.4156172E 03
-5.0200547E 03	-3.3306391E 04	-1.2831258E 04	-1.6867400E 03	-3.0026613F 04	1.3835266E 04
-1.2831262F 04	1.2831270F 04	-1.2556753E 03	-6.4156328E 03	1.3835281E 04	-5.9611445E 03
1.3605306F 05	-3.8040070F 04	-1.3835266E 04	2.1359949F 04	-8.6265352F 03	-6.9176211F 03
-3.8040070E 04	1.3605306F 05	1.3835270E 04	8.6264961F 03	-2.2720230E 04	-1.2831258E 04
-1.3835266F 04	1.3835270E 04	2.2588906F 04	-6.9176250E 03	1.2831266F 04	6.2783521E 02
2.1359957E 04	8.6264961E 03	-6.9176250E 03	1.3605313E 05	3.8040105F 04	-1.3835273E 04
-8.6265352E 03	-2.2720230E 04	1.2831266E 04	3.8040105E 04	1.3605313E 05	-1.3835270E 04
-6.9176211E 03	1.2831258E 04	6.2783521E 02	-1.3835273E 04	-1.3835270E 04	2.2588902E 04
-1.679969F 04	5.0200586F 04	6.9176211E 03	-3.0026675F 04	-1.6867403E 03	1.3835266F 04
5.0200508F 03	-1.6679973E 04	-6.9176289E 03	1.6867400E 03	-1.9986515F 04	6.4156211E 03
6.9176367E 03	-6.9176328E 03	-5.6472227E 03	1.3835273E 04	-6.4156328E 03	-5.9611406E 03
-3.0026613E 04	1.6867390F 03	1.3835262E 04	-1.6679969E 04	-5.0200547E 03	6.9176172E 03
-1.6867412F 03	-1.9986504E 04	-6.4156172E 03	5.0200547E 03	1.6679973E 04	6.9176250E 03
1.3835270E 04	6.4156328E 03	-5.9611328E 03	6.9176367E 03	-3.8040070E 04	-6.4156188E 03
-2.2720156E 04	-8.6264766F 03	-1.2831250F 04	-3.4693387E 04	-3.8040070E 04	-6.4156133E 03
8.6265156F 04	2.1360000E 04	6.9176172E 03	3.8040070E 04	-3.4693398E 04	-6.4156211E 03
1.2831254F 04	6.9176211F 03	6.2784106E 02	6.4156250F 03	6.4156289F 03	-5.0193633E 03
-3.4693398F 04	3.8040059E 04	-6.4156172E 03	-2.2720215E 04	8.6264922E 03	-1.2831254E 04
3.8040070E 04	-3.4693398E 04	6.4156250E 03	-8.6265391E 03	2.1359953E 04	-6.9176250F 03
6.4156289E 03	-6.4156211E 03	-5.0193711E 03	1.2831262E 04	-6.9176289E 03	5.64728033E 02

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 13-18

6.6130586E 03	3.3734758E 03	-1.2831258E 04	-2.6775879E 01	-1.0040117E 04	-5.4156328E 03
-3.3734805E 03	2.6693297E 04	6.9176289E 03	-1.0040113E 04	-2.6776123E 01	-6.4156289E 03
1.2831273E 04	6.9176328E 03	6.2783228E 02	6.4156250E 03	6.4156289E 03	-5.0193906E 03
-2.6779785E 01	1.0040113E 04	-6.4156328E 03	6.5130625E 03	3.3734778E 03	-1.2831258E 04
1.0040113E 04	-2.6779564E 01	6.4156289E 03	3.3734797E 03	2.6693293E 04	-6.9176323E 03
6.4156250E 03	-6.4156328E 03	-5.0193945E 03	1.2831270E 04	-6.9176328E 03	6.2783545E 02
-1.6679969E 04	5.0200508E 03	6.9176367E 03	-3.0026613E 04	-1.6867412E 03	1.3835270E 04
5.0200596E 03	-1.6679773E 04	-6.9176328E 03	1.6867390E 03	-1.9986504E 04	5.4156328E 03
6.9176211E 03	-6.9176289E 03	-5.6472227E 03	1.3835262E 04	-6.4156172E 03	-5.9611328E 03
-3.0026625E 04	1.6867400E 03	1.3835273E 04	-1.6679959E 04	-5.0200547E 03	6.9176367E 03
-1.5867400E 03	-1.9986516E 04	-6.4156328E 03	-5.0200547E 03	1.6679973E 04	6.9176328E 03
1.3835266E 04	6.4156211E 03	-5.9611406E 03	6.9176172E 03	6.9176250E 03	-5.6472189E 03
6.9179875E 04	-1.0040117E 04	-1.3835277E 04	2.6693289E 04	3.3734832E 03	-6.9176328E 03
-1.0040117E 04	5.6719875E 04	1.3835273E 04	-3.3734753E 03	6.6130742E 03	-1.2831266E 04
1.3835277E 04	1.3835273E 04	2.2589898E 04	-6.9176328E 03	1.2831266E 04	6.2783984E 02
2.6693289E 04	-3.3734753E 03	-6.9176328E 03	6.6719813E 04	1.0040113E 04	-1.3835273E 04
3.3734832E 03	6.4130742E 03	1.2831266E 04	1.0040113E 04	6.6719813E 04	-1.3835273E 04
-6.9176328E 03	-1.2831266E 04	5.2783984E 02	-1.3835273E 04	-1.3835273E 04	2.2589898E 04
-1.9986489E 04	1.6867383E 03	6.4156289E 03	-3.3806402E 04	5.0200508E 03	1.2831262E 04
1.6867407E 03	-3.0026605E 04	-1.3835273E 04	5.0200508E 03	-3.3806402E 04	1.2931262E 04
-6.4156133E 03	-1.3835266E 04	-5.9611328E 03	-1.2831250E 04	1.2831254E 04	-1.2556799E 03
-3.3306393E 04	-5.0200547E 03	1.2831266E 04	-1.9986500E 04	1.6867407E 03	6.4156299E 03
-5.0200547E 03	-3.3306406E 04	-1.2831258E 04	-1.6867388E 03	-3.0026613E 04	1.3835266E 04
-1.2831258E 04	1.2831258E 04	-1.2556760E 03	-6.4156172E 03	1.3835262E 04	-5.9611328E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 19-24

-1.6679945E 04	-5.0200547E 03	-6.9176250E 03	-3.0026602E 04	1.6867393E 03	-1.3835270E 04
-5.0200547E 03	-1.6679945E 04	-6.9176250E 03	-1.6867402E 03	-1.9986480E 04	6.4156211E 03
-6.9176289E 03	-6.9176289E 03	-5.6472188E 03	-1.3835277E 04	-6.4156328E 03	-5.9611367E 03
-3.0026598E 04	-1.6867402E 03	-1.3835262E 04	-1.6679957E 04	5.0200508E 03	-5.9176259E 03
1.5867390E 03	-1.9986488E 04	-5.4156172E 03	5.0200586E 03	-1.6679953E 04	6.9176250E 03
-1.3835277E 04	6.4156328E 03	-5.9611328E 03	-6.9176289E 03	6.9176289E 03	-5.6472188E 03
-2.2720156E 04	8.6265117E 03	1.2931254E 04	-3.4693398E 04	3.8040070E 04	6.4156299E 03
-8.6264766E 03	2.1360008E 04	5.9176211E 03	3.8040059E 04	-3.4693398E 04	-6.4156211E 03
-1.2831250E 04	6.9176172E 03	6.2784106E 02	-6.4156172E 03	6.4156250E 03	-5.0193711E 03
-3.4693387E 04	-3.8040055E 04	6.4156250E 03	-2.2720215E 04	-8.6265391E 03	1.2831262E 04
-3.8040055E 04	-3.4693398E 04	6.4156289E 03	8.6264883E 03	2.1359961E 04	-6.9176289E 03
-6.4156133E 03	-6.4156211E 03	-5.0193633E 03	-1.2831254E 04	-6.9176250E 03	6.2784033E 02
-1.9986489E 04	1.6867407E 03	-6.4156133E 03	-3.3306398E 04	-5.0200547E 03	1.2931258E 04
-1.6867393E 03	-3.0026605E 04	-1.3835266E 04	-5.0200547E 03	-3.3306406E 04	1.2831258E 04
6.4156299E 03	-1.3835273E 04	-5.9611328E 03	1.2831266E 04	-1.2831258E 04	-1.2556760E 03
-3.3306402E 04	5.0200508E 03	1.2831250E 04	-1.9986500E 04	1.6867388E 03	-6.4156172E 03
5.0200508E 03	-3.3306402E 04	-1.2831254E 04	-1.6867407E 03	3.0026613E 04	1.3835262E 04
1.2831262E 04	1.2831262E 04	-1.2556799E 03	6.4156289E 03	1.3835266E 04	-5.9611328E 03
1.3605231E 05	3.9040020E 04	1.3835254E 04	2.1360000E 04	8.6265117E 03	6.9176133E 03
3.8040020E 04	1.3605288E 05	1.3835258E 04	-6.9176277E 03	1.2720172E 04	-1.2831250E 04
1.3835254E 04	1.3835259E 04	2.2589887E 04	6.9176133E 03	1.2831254E 04	6.2783594E 02
2.1360008E 04	-8.6264727E 03	6.9176133E 03	1.3605306E 05	-3.8040074E 04	1.3835266E 04
8.6265117E 03	-2.2720172E 04	1.2931254E 04	-3.8040074E 04	1.3605306E 05	-1.3835262E 04
6.9176133E 03	-1.2831250E 04	6.2783594E 02	1.3835266E 04	-1.3835262E 04	2.2589898E 04

ISTAK

3

ELEMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER

324	6.6719875E 04	347	1.0040113E 04	343	6.65719875E 04	370	1.3835266E 04	371	1.3835277E 04	372	2.2588902E 04
393	2.6693289E 04	394	3.3734724E 03	395	6.6719875E 03	396	6.6719875E 04	415	-3.3734800E 03	417	6.6130664E 03
418	1.2831270E 04	419	-1.0040113E 04	420	6.6719875E 04	439	6.9176367E 03	440	-1.2831266E 04	441	6.2183447E 02
442	1.3835266E 04	443	-1.3835277E 04	444	2.2588902E 04	469	-1.9986500E 04	470	1.0867412E 03	471	6.4156328E 03
572	-3.306395E 04	673	-5.0209547E 03	674	-1.2831262E 04	694	-1.3605306E 05	692	-1.5867385E 03	593	-3.0026613E 04
694	1.3935281E 04	695	-5.0209547E 03	696	-3.306395E 04	697	1.2831270E 04	707	-3.8040070E 04	708	1.3605306E 05
715	6.4156211E 03	716	-1.3835270E 04	717	-5.9611445E 03	719	1.2831258E 04	719	-1.2831258E 04	720	1.2556753E 03
730	-1.3835266E 04	731	1.3835270E 04	732	2.2588902E 04	733	2.2588902E 04	733	2.2588902E 04	602	-1.2831266E 04
603	-1.9986500E 04	604	-1.6867400E 03	605	-6.4156328E 04	681	2.1359957E 04	704	5.6264951E 03	727	-6.9176250E 03
612	1.3605313E 05	623	5.0209547E 03	624	-3.306395E 04	625	-1.2831270E 04	626	1.6867397E 03	627	-3.0026613E 04
628	1.3935281E 04	687	8.6263552E 03	705	-2.2720215E 04	728	1.2831266E 04	635	3.8040059E 04	651	-5.9611445E 03
646	1.2331258E 04	647	1.2831262E 04	648	-1.2556753E 03	649	6.4156172E 03	650	1.3835266E 04	660	2.2588902E 04
693	-6.9176211E 03	706	-1.2831258E 04	729	6.2781321E 02	658	-1.3835273E 04	659	-1.3835270E 04	467	6.4156250E 03
462	6.6130536E 03	463	-3.3734758E 03	464	1.2831273E 04	465	-2.777985E 01	466	1.0040113E 04	652	1.3835266E 04
675	-1.6679959E 04	698	5.0209586E 03	721	6.9176211E 03	466	-3.0026625E 04	629	-1.6867400E 03	510	6.2783228E 02
468	6.6719875E 04	469	3.3734758E 03	486	2.6693297E 04	487	6.9176328E 03	488	1.0340113E 04	723	-5.6472221E 03
490	-6.4156328E 03	676	5.0209586E 03	699	-1.6679973E 04	722	-6.9176328E 03	607	1.6867400E 03	489	-2.6776123E 01
653	6.4156211E 03	491	-1.0040117E 04	492	1.6679975E 04	508	-1.2831258E 04	509	6.9176328E 03	630	-1.9986516E 04
511	-6.4156328E 03	512	6.4156289E 03	513	-5.0193945E 03	677	6.9176367E 03	700	-6.9176328E 03	516	2.2588888E 04
608	1.3835273E 04	631	-6.4156328E 03	654	-5.9611406E 03	514	-1.3835277E 04	515	1.3835273E 04	536	1.2831270E 04
531	-2.6775879E 01	532	-1.0040113E 04	533	6.4156250E 03	534	6.6130625E 03	535	3.3734737E 03	555	-2.6776123E 01
678	-3.0026613E 04	701	1.6867390E 03	724	1.3835262E 04	609	-1.6679969E 03	632	-5.0209547E 03	561	6.6130742E 03
537	2.6693289E 04	538	-3.3734753E 03	539	6.6719813E 04	540	6.6719813E 04	554	-1.0040117E 04	579	-1.6867412E 03
556	6.4156299E 03	557	-3.3734778E 03	558	2.6693293E 04	559	-6.9176328E 03	560	3.3734832E 03	579	6.0193390E 03
725	-6.4156172E 03	610	-5.0209547E 03	633	-1.6679973E 04	634	6.5719813E 04	573	-6.4156289E 03	726	-5.9611328E 03
562	1.2831266E 04	563	1.0040113E 04	564	6.5719813E 04	577	-6.4156328E 03	584	-1.2831266E 04	585	6.2783984E 02
580	-1.2831258E 04	581	-6.9176328E 03	582	6.2783545E 02	583	-6.9176328E 03	808	-5.0209547E 03	809	-6.9176289E 03
611	6.9176377E 03	634	6.9176328E 03	657	-5.6472188E 03	807	-1.6679945E 04	814	-1.6867383E 03	824	-1.2931250E 04
810	-3.0026599E 04	811	1.6867390E 03	812	-1.3835277E 04	821	-1.3835277E 04	823	-8.8264766E 03	831	-1.6679957E 04
819	-3.4693397E 04	820	-3.8040070E 04	821	-6.4156133E 04	828	1.3605391E 05	830	-5.0209547E 03	846	2.1360000E 04
916	-1.3364027E 04	829	5.0209508E 03	830	1.2831262E 04	835	6.4156328E 03	836	1.6867407E 03	837	-3.0026605E 04
932	-6.9176289E 03	833	-1.6867402E 03	834	-1.9986588E 04	844	-6.4156211E 03	851	3.8040020E 04	852	1.3605288E 05
847	6.9176172E 03	842	-3.8040070E 04	843	-3.4693398E 04	845	8.8265156E 03	857	-6.4156172E 03	858	-5.9611328E 03
838	-1.3835273E 04	839	5.0209508E 03	840	-3.3064032E 04	841	1.2831262E 04	864	-1.2831254E 04	866	-1.2556799E 03
853	-6.9176250E 03	854	-6.9176289E 03	855	-5.6472188E 03	856	-1.3835262E 04	739	-1.6867402E 03	740	-1.3835277E 04
868	1.2831254E 04	869	6.9176211E 03	870	6.2784106E 02	865	6.4156250E 03	754	3.8040059E 04	755	-6.4156172E 03
874	1.3835254E 04	875	1.3835258E 04	876	-1.3835266E 04	862	-1.2831250E 04	745	-5.0209547E 03	746	1.2831266E 04
741	-1.6679957E 04	742	5.0209586E 03	743	-3.4693398E 04	753	-3.4693398E 04	848	-8.8264727E 03	871	6.9176133E 03
750	-2.2720215E 04	751	8.6264922E 03	752	-1.2831254E 04	825	2.1360038E 04	764	5.0209508E 03	765	-1.6579953E 04
747	-1.3986500E 04	748	1.6967407E 03	749	6.4156289E 03	763	6.4156250E 03	773	-8.8265391E 03	774	2.1359953E 04
756	6.9176289E 03	761	1.6867393E 03	762	-1.9286480E 04	778	6.4156250E 03	779	-1.6867388E 03	771	-3.0026613E 04
766	6.9176289E 03	775	-6.9176250E 03	776	-5.0209547E 03	768	-3.3064032E 04	770	-1.6867388E 03	780	1.3605306E 05
772	1.3835266E 04	784	8.6265117E 03	785	6.4156211E 03	849	-2.2720172E 04	779	-3.8040074E 04	789	-5.6472188E 03
784	-1.3835270E 04	785	6.4156211E 03	786	-5.9611367E 03	787	-6.9176289E 03	788	6.9176250E 03	798	5.9611328E 02
799	6.4156289E 03	800	-6.4156211E 03	801	-5.0193911E 03	796	1.2831262E 04	797	-6.9176289E 03	795	-5.9611328E 02
790	-1.2831258E 04	791	1.2831258E 04	792	-1.2556760E 03	793	-6.4156172E 03	794	1.3835262E 04	804	2.2588895E 04
827	6.9176133E 03	850	-1.2831250E 04	873	6.2783594E 02	802	1.3835266E 04	803	-1.3835262E 04		

FROM OUTLAP,
NAME = MASS MAT, I/O UNIT = 20, FILE = 2, ROWS = 48, COLUMNS = 48

FROM PUTLAP,
NAME = C-MATRIX, I/O UNIT = 20, FILE = 3, ROWS = 48, COLUMNS = 48

FSACK

NSTAK

NSTAK

FROM PUTLAB,
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM GETDIM,
NAME = AO AG-56, I/O UNIT = 12, FILE = 1, ROWS = 3, COLUMNS = 1

FROM GETDIM,
NAME = C-MATRIX, I/O UNIT = 20, FILE = 3, ROWS = 48, COLUMNS = 48

FROM PUTLAB,
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM GETDIM,
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB,
NAME = NAMFA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB,
NAME = NAMFA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

FROM GETDIM,
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB,
NAME = NAMFA , I/O UNIT = 11, FILE = 2, ROWS = 12, COLUMNS = 12

FROM GETDIM,
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM PUTLAB,
NAME = NAMFA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 13, FILE = 3, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

FROM PUTLAB,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM PUTLAB,
NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 36

FSAKG/RESTOR

ELAS/PARTIN

ELAS/PARTIN

ELAS/PARTIN

ELAS/PARTIN

ELAS/PARTIN

ELAS/QFACT

THE LOWER TRIANGLE OF THE TOTAL STIFFNESS MATRIX OF THE TILE

[illegible]

13	-1.5567E 04	14	1.5948E 04	15	1.6847E 03	16	-5.5666E 03	17	7.4051E 04	18	1.6847E 03
19	5.5666E 03	20	4.1896E 04	21	3.3694E 03	22	1.5567E 04	23	1.6810E 05	24	6.9176E 03
1	-7.6489E 03	2	-8.6023E 03	3	-6.5929E 03	4	-1.5298E 04	5	-6.7309E 03	6	-1.0519E 04
7	-5.6843E 03	8	-1.7205E 04	9	-1.0519E 04	10	-1.1369E 04	11	-9.4619E 03	12	-1.5705E 04
13	-7.3130E 02	14	-1.6847E 03	15	-3.7598E 03	16	-1.4626E 03	17	1.6847E 03	18	8.4803E 03
19	7.3123E 02	20	-3.3694E 03	21	8.4803E 03	22	1.4626E 03	23	3.3694E 03	24	4.8961E 04
13	-3.3306E 04	14	5.0201E 03	15	-1.2831E 04	16	-1.9987E 04	17	-1.6967E 03	18	-6.4156E 03
19	-3.0027E 04	20	1.6867E 03	21	1.3835E 04	22	-1.6860E 04	23	-5.0201E 03	24	6.9176E 03
25	1.3605E 05	26	-3.3306E 04	27	-1.2831E 04	28	1.6867E 03	29	-3.0027E 04	30	1.3835E 04
13	-1.9987E 03	14	1.2831E 04	15	-1.2557E 03	16	6.4156E 03	17	1.3935E 04	18	-5.9611E 03
19	1.3835E 04	20	6.4156E 03	21	-5.9611E 03	22	6.9176E 03	23	6.9176E 03	24	-5.6472E 03
25	-1.3835E 04	26	-1.3835E 04	27	2.2589E 04	28	2.2589E 04	29	1.3935E 04	30	-5.6472E 03
13	-1.9987E 03	14	1.6867E 03	15	-6.4156E 03	16	-3.3306E 04	17	-5.0201E 03	18	-1.2831E 04
19	-1.6867E 03	20	5.0201E 03	21	6.9176E 03	22	-3.0027E 04	23	-1.6867E 03	24	1.3835E 04
25	2.1360E 04	26	-8.5265E 03	27	-6.9176E 03	28	1.3605E 05	29	1.3605E 05	30	6.4156E 03
13	-1.867E 03	14	-3.0027E 04	15	-1.3835E 04	16	-5.0201E 03	17	-3.3306E 04	18	1.2831E 04
19	5.0201E 03	20	1.6867E 03	21	-6.9176E 03	22	1.6867E 03	23	-1.9987E 04	24	6.4156E 03
25	8.6265E 03	26	-2.2720E 04	27	-1.2831E 04	28	-3.8040E 04	29	1.3605E 05	30	6.4156E 03
13	6.4156E 03	14	-1.3835E 04	15	-5.9611E 03	16	1.2831E 04	17	-1.2831E 04	18	-1.2557E 03
19	6.9176E 03	20	-6.9176E 03	21	-5.6472E 03	22	1.3935E 04	23	-6.4156E 03	24	-5.9611E 03
25	-6.9176E 03	26	1.2831E 04	27	6.2784E 02	28	-1.3935E 04	29	1.3835E 04	30	2.2589E 04
13	-3.0027E 04	14	-1.6867E 03	15	-1.3835E 04	16	-1.6867E 03	17	5.0201E 03	18	-6.9176E 03
19	3.3306E 04	20	-5.0201E 03	21	1.2831E 04	22	-1.9987E 04	23	1.6867E 03	24	6.4156E 03
25	-2.2720E 04	26	8.6265E 03	27	-1.2831E 04	28	-3.4593E 04	29	3.8040E 04	30	-6.4156E 03
31	1.3605E 05	32	-1.9987E 03	33	-6.4156E 03	34	5.0201E 03	35	-1.6680E 04	36	6.9176E 03
13	1.6867E 03	14	-1.9987E 04	15	-6.4156E 03	16	5.0201E 03	17	-1.6680E 04	18	6.9176E 03
19	-5.0201E 03	20	-3.3306E 04	21	-1.2831E 04	22	-1.6680E 04	23	-3.0027E 04	24	1.3835E 04
25	-8.6265E 03	26	2.1360E 04	27	-6.9176E 03	28	3.8040E 04	29	-3.4693E 04	30	6.4156E 03
31	-3.8040E 04	32	1.3605E 05	33	-6.4156E 03	34	-6.9176E 03	35	6.9176E 03	36	-5.6472E 03
13	-1.3835E 04	14	6.4156E 03	15	-5.9611E 03	16	-6.9176E 03	17	6.9176E 03	18	-5.6472E 03
19	-1.2831E 04	20	1.2831E 04	21	-1.2557E 03	22	-6.4156E 03	23	1.3835E 04	24	-5.9611E 03
25	1.3935E 04	26	-6.9176E 03	27	6.2784E 02	28	6.4156E 03	29	-6.4156E 03	30	-5.0194E 03
31	1.3935E 04	32	-1.3935E 04	33	2.2589E 04	34	-3.0027E 04	35	1.6867E 03	36	-1.3835E 04
13	-1.6680E 04	14	-5.0201E 03	15	-6.9176E 03	16	6.4156E 03	17	1.6867E 03	18	-1.3835E 04
19	-1.9987E 04	20	-1.6867E 03	21	6.4156E 03	22	-3.3306E 04	23	5.0201E 03	24	1.2831E 04
25	-3.4593E 04	26	-3.8040E 04	27	-6.4156E 03	28	-2.2720E 04	29	-8.6265E 03	30	-1.2831E 04
31	2.1360E 04	32	8.6265E 03	33	6.9176E 03	34	1.3605E 05	35	-1.9987E 04	36	6.4156E 03
13	-5.0201E 03	14	-1.6867E 03	15	-6.9176E 03	16	-1.6867E 03	17	-1.9987E 04	18	6.4156E 03
19	1.6867E 03	20	-3.0027E 04	21	-1.3835E 04	22	5.0201E 03	23	-3.3306E 04	24	1.2831E 04
25	-3.8040E 04	26	-3.4693E 04	27	-6.4156E 03	28	8.6265E 03	29	2.1360E 04	30	6.9176E 03
31	-8.6265E 03	32	-2.2720E 04	33	-1.2831E 04	34	3.8040E 04	35	1.3605E 05	36	-5.9611E 03
13	-6.9176E 03	14	-6.9176E 03	15	-5.6472E 03	16	-1.3835E 04	17	-6.4156E 03	18	-5.9611E 03
19	-6.4156E 03	20	-1.3835E 04	21	-5.9611E 03	22	-1.2831E 04	23	-1.2831E 04	24	-1.2557E 03
25	6.4156E 03	26	6.4156E 03	27	-5.0194E 03	28	1.2831E 04	29	6.9176E 03	30	6.2784E 02
31	6.9176E 03	32	6.2784E 02	33	1.3835E 04	34	1.3835E 04	35	1.3835E 04	36	2.2589E 04

FROM GETDIN, NAME = GEOMETRY, I/O UNIT = 10, FILE = 1, ROWS = 13, COLUMNS = 5

FROM GETDIN, NAME = BND.COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

PROCES

PRINT3

**** MEMBER NUMBER = 1 *****

MATRIX (AKG) 1) 8 ROWS, 8 COLUMNS, FROM PROGRAM ELS

1	2	3	4	5	6	7	8
1	5.133293D 06	1.785714D 06	3.612119D 05	-3.210215D 06	-1.373635D 05	-2.284290D 06	0.0
2	1.785714D 06	5.133293D 06	-1.373635D 05	1.373635D 05	3.612119D 05	-1.785715D 06	0.0
3	3.612119D 05	-1.373635D 05	5.133293D 06	-2.284290D 06	1.785715D 06	-3.210215D 06	0.0
4	-3.210215D 06	1.373635D 05	-2.284290D 06	5.133293D 06	-1.785714D 06	3.612119D 05	0.0
5	-1.373635D 05	3.612119D 05	1.785715D 06	-1.785714D 06	5.133293D 06	1.373635D 05	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	-2.284290D 06	-1.785715D 06	-3.210215D 06	3.612119D 05	1.373635D 05	5.133293D 06	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (AKG) 1) 20 ROWS, 20 COLUMNS, FROM PROGRAM ELL6

1	2	3	4	5	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	1.681747D 06	-8.198144D 05	0.0	4.331995D 05	8.721421D 04
4	0.0	0.0	-8.198144D 05	1.681747D 06	0.0	-8.721421D 04	1.497534D 05
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	4.331995D 05	-8.721421D 04	0.0	1.681747D 06	8.198144D 05
8	0.0	0.0	8.721421D 04	1.497534D 05	0.0	1.681747D 06	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	-5.494495D 04	3.663000D 05	0.0	1.831501D 05	0.0
13	0.0	0.0	1.497534D 05	8.721421D 04	0.0	4.825506D 05	3.706610D 05
14	0.0	0.0	-8.721421D 04	4.331995D 05	0.0	3.706610D 05	4.825506D 05
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	-1.831501D 05	1.831501D 05	0.0	5.494495D 04	3.663000D 05
18	0.0	0.0	4.825506D 05	-3.706610D 05	0.0	1.497534D 05	-8.721421D 04
19	0.0	0.0	-3.706610D 05	4.825506D 05	0.0	8.721421D 04	4.331995D 05
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (AKG) 1) 20 ROWS, 20 COLUMNS, FROM PROGRAM ELL6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

15	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
16	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
17	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
18	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
19	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
20	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0

1	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
2	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
3	-1.831501D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
4	1.831501D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
5	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
6	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
7	5.494495D 04	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
8	3.663000D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
9	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
10	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
11	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
12	-2.197800D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
13	-3.663000D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
14	-5.494495D 04	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
15	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
17	4.395601D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
18	-6.043951D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
19	6.043951D 05	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0
20	0.0	17	0.0	18	0.0	19	0.0	20	0.0	21	0.0	22	0.0	23	0.0	24	0.0

**** MEMBER NUMBER = 2 *****

MATRIX (AKG) 2) 6 ROWS, 6 COLUMNS, FROM PROGRAM EL5

1	5.133293D 06	2	1.785714D 06	3	0.0	4	3.612119D 05	5	0.0	6	-1.373635D 05
2	1.785714D 06	2	5.133293D 06	3	0.0	4	-1.373635D 05	5	0.0	6	3.612119D 05
3	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0
4	3.612119D 05	2	-1.373635D 05	3	0.0	4	5.133293D 06	5	0.0	6	1.785715D 06
5	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0
6	-1.373635D 05	2	3.612119D 05	3	0.0	4	1.785715D 06	5	0.0	6	5.133293D 06

MATRIX (AKG) 2) 18 ROWS, 18 COLUMNS, FROM PROGRAM EL16

1	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
2	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
3	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
4	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
5	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
6	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
7	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
8	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
9	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
10	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
11	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
12	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
13	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
14	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
15	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
16	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
17	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
18	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
19	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
20	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0

PRINT3

18 0.0 17 18 0.0

**** MEMBER NUMBER = 3 *****
1 3 7

MATRIX (AKG 3) 11 ROWS, 11 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	2.000000 06	7.7271540-13	-8.0452530-10	-1.000000 06	1.9317880-12	-2.000000 06	-7.7271540-13	0.0
2	7.7271540-13	9.6000020 02	4.8000010 02	0.0	2.400000 03	-7.7271540-13	-9.6000020 02	0.0
3	-8.0452530-10	4.8000010 02	4.0861540 03	4.0869510-10	1.200000 03	8.0452530-10	-4.8000010 02	1.9317880-12
4	-1.000000 06	0.0	4.0869510-10	5.080000 05	0.0	1.000000 06	0.0	2.400000 03
5	1.9317880-12	2.400000 03	1.200000 03	0.0	8.0000010 03	-1.000000 06	-2.400000 03	0.0
6	-2.000000 06	-7.7271540-13	8.0452530-10	1.000000 06	-1.9317880-12	2.000000 06	7.7271540-13	0.0
7	-7.7271540-13	-9.6000020 02	-4.8000010 02	0.0	-2.400000 03	7.7271540-13	9.6000020 02	0.0
8	0.0	0.0	1.9317880-12	2.400000 03	0.0	0.0	0.0	9.6000020 02
9	8.0452530-10	-4.8000010 02	-4.0861540 03	-3.9923620-10	-1.200000 03	-8.0452530-10	4.8000010 02	1.9317880-12
10	1.000000 06	0.0	-3.9923620-10	-4.960000 05	0.0	-1.000000 06	0.0	2.400000 03
11	1.9317880-12	2.400000 03	1.200000 03	0.0	4.0000010 03	-1.9317880-12	-2.400000 03	0.0

**** MEMBER NUMBER = 4 *****
3 5 7

MATRIX (AKG 4) 10 ROWS, 10 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	2.000000 06	0.0	0.0	0.0	-1.000000 06	0.0	0.0	0.0
2	0.0	9.6000020 02	0.0	4.8000010 02	0.0	2.400000 03	-9.6000020 02	-4.8000010 02
3	0.0	0.0	9.6000020 02	0.0	-2.400000 03	0.0	0.0	0.0
4	0.0	4.8000010 02	0.0	4.0861540 03	0.0	1.200000 03	-4.8000010 02	-4.0861540 03
5	-1.000000 06	0.0	-2.400000 03	0.0	5.080000 05	0.0	0.0	0.0
6	0.0	2.400000 03	0.0	1.200000 03	0.0	8.0000010 03	-2.400000 03	-1.200000 03
7	0.0	-9.6000020 02	0.0	-4.8000010 02	0.0	-2.400000 03	9.6000020 02	4.8000010 02
8	0.0	-4.8000010 02	0.0	-4.0861540 03	0.0	-1.200000 03	4.8000010 02	4.0861540 03
9	1.000000 06	0.0	-2.400000 03	0.0	-6.960000 05	0.0	0.0	0.0
10	0.0	2.400000 03	0.0	1.200000 03	0.0	4.0000010 03	-2.400000 03	-1.200000 03

PRINT3

```

3  -2.400000 03  0.0
4  0.0
5  -4.960000 05
6  0.0
7  0.0
8  0.0
9  5.080000 05
10 0.0

```

MEMBER NUMBER = 5 *****

MATRIX (AKG 5) 9 ROWS, 9 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	2.000000 06	0.0	-1.000000 06	0.0	-2.000000 06	0.0	0.0	1.000000 06
2	0.0	4.086154 03	0.0	1.200000 03	0.0	0.0	-4.086154 03	0.0
3	-1.000000 06	0.0	5.080000 05	0.0	1.000000 06	2.400000 03	0.0	-4.960000 05
4	0.0	1.200000 03	0.0	8.000000 03	0.0	0.0	-1.200000 03	0.0
5	-2.000000 06	0.0	1.000000 06	0.0	2.000000 06	0.0	0.0	-1.000000 06
6	0.0	0.0	2.400000 03	0.0	0.0	9.600000 02	0.0	2.400000 03
7	0.0	-4.086154 03	0.0	-1.200000 03	0.0	0.0	4.086154 03	0.0
8	1.000000 06	0.0	-4.960000 05	0.0	-1.000000 06	2.400000 03	0.0	5.080000 05
9	0.0	1.200000 03	0.0	4.000000 03	0.0	0.0	-1.200000 03	0.0

```

1  0.0
2  1.200000 03
3  0.0
4  4.000000 03
5  0.0
6  0.0
7  -1.200000 03
8  0.0
9  8.000000 03

```

MEMBER NUMBER = 6 *****

MATRIX (AKG 6) 8 ROWS, 8 COLUMNS, FROM PROGRAM FL2

	1	2	3	4	5	6	7	8
1	2.000000 06	0.0	0.0	-1.000000 06	0.0	0.0	1.000000 06	0.0
2	0.0	9.600000 02	0.0	-2.400000 03	0.0	0.0	-2.400000 03	0.0
3	0.0	0.0	4.086154 03	0.0	1.200000 03	-4.086154 03	0.0	1.200000 03
4	-1.000000 06	-2.400000 03	0.0	5.080000 05	0.0	0.0	-4.960000 05	0.0
5	0.0	0.0	1.200000 03	0.0	8.000000 03	-1.200000 03	0.0	4.000000 03
6	0.0	0.0	-4.086154 03	0.0	-1.200000 03	4.086154 03	0.0	-1.200000 03
7	1.000000 06	-2.400000 03	0.0	-4.960000 05	0.0	0.0	5.080000 05	0.0
8	0.0	0.0	1.200000 03	0.0	4.000000 03	-1.200000 03	0.0	8.000000 03

MATRIX K11 HAS 8 MEMBERS AND A BAND WIDTH OF 20.

INPUT

ASTACK

SBMAIN/QFACT

```

FROM PUTLAB,
NAME = TOTSTIFF, I/O UNIT = 4, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = EL STIFF, I/O UNIT = 9, FILE = 1, ROWS = 8, COLUMNS = 24

FROM GETDIM,
NAME = TOTSTIFF, I/O UNIT = 4, FILE = 2, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME = , I/O UNIT = 2, FILE = 1, ROWS = 27, COLUMNS = 27

```

OCHOL/KPRINT

THE LOWER TRIANGLE OF THE TOTAL STIFFNESS MATRIX OF THE PRIMARY STRUCTURE

ROW	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT
1	1	1.4833E 06										
2	1	4.4643E 05	2	1.2834E 06								
3	1	-8.0452E-11	2	4.8000E 01								
4	1	-1.0000E 05	3	-1.2810E 04								
5	1	1.9313E-13	2	2.4000E 02								
6	1	9.0303E 04	2	-3.4341E 04					5	8.0000E 07		
7	3	6.7687E 03	4	-1.3627E 03								
8	3	1.3627E 03	4	2.3399E 03					7	1.2810E 04	8	7.7077E 04
9	7	1.2000E 02	9	8.0000E 02								
10	1	-1.0020E 06	2	3.4341E 04					4	1.0000E 05	5	-1.9318E-13
11	1	-3.4341E 04	2	9.0207E 04					3	8.0452E-11	6	-5.7107E 05
12	3	-8.5851E 02	4	5.9634E 03					3	-4.8000E 01	5	-2.4000E 02
13	1	8.0452E-11	2	-4.8000E 01					7	2.8617E 03	8	4.4643E 05
14	1	1.0000E 05	3	-1.3627E 03					3	1.9313E 03	12	1.3928E 04
15	12	1.6382E-12	13	4.4527E-11					11	9.6000E 01	13	5.3372E 04
16	1	1.9318E-13	2	2.4000E 02					4	-4.2831E 04	8	7.5399E 03
17	3	-2.8617E 03	4	2.8617E 03					14	1.5415E 05	10	-1.9318E-13
18	3	7.5399E 03	4	-5.7916E 03					5	4.0000E 02	15	1.6000E 03
19	3	-5.7916E 03	4	7.5399E 03					8	1.0000E 05	16	2.9666E 06
20	7	1.2000E 02	9	4.0000E 02					7	8.5851E 02	13	-1.1447E 04
21	10	-3.4341E 04	11	9.0207E 04					8	-1.3627E 03	9	-1.2000E 02
22	11	-4.8000E 01	12	-8.5851E 02					18	5.3372E 04	12	1.447E 04
23	10	1.0000E 05	12	-5.9634E 03					7	1.3627E 03	12	3.4106E-12
24	11	2.4000E 02	13	1.9313E 03					16	-2.0000E 05	19	1.5415E 05
25	12	2.8617E 03	13	7.5399E 03					15	-2.4000E 02	16	4.4643E 05
26	12	-1.2000E 02	22	6.7687E 03					14	1.3627E 03	15	-1.2000E 02
27	19	-4.8517E 03	22	-1.3627E 03					22	2.6686E 04	17	-2.8617E 03
	18	1.2000E 02	20	4.0000E 02					14	-4.2831E 04	19	5.7916E 03
									23	7.7077E 04	22	-1.2000E 02
									15	4.0000E 02	24	8.0000E 02
									14	-5.7916E 03	18	1.9313E 03
									23	1.3627E 03	19	-1.3627E 03
									14	7.5399E 03	17	-5.9634E 03
									23	2.3399E 03	26	7.7077E 04
									25	-1.2000E 02		
									27	8.0000E 02		

SBMAIN/QFSOL

FROM GETDIM,
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = LOADS , I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

SBMAIN/REVERS

FROM PUTLAR, NAME =	, I/O UNIT = 2, FILE = 1, ROWS = 27, COLUMNS = 27	SBMAIN/REVERS
FROM GETDIM, NAME =	, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 1	SBMAIN/REVERS
FROM PUTLAR, NAME =	, I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 1	SBMAIN/QBSOL
FROM GETDIM, NAME =	, I/O UNIT = 2, FILE = 1, ROWS = 27, COLUMNS = 27	
FROM GETDIM, NAME =	, I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM PUTLAR, NAME = DEFLECT	, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 1	
FROM PUTLAR, NAME =	, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM GETDIM, NAME = DEFLECT	, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 1	SBMAIN/REVERS
FROM PUTLAR, NAME = DEFLECT	, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM GETDIM, NAME = BND CONO	, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11	SBMAIN/MSOUT
FROM GETDIM, NAME = DEFLECT	, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	

SBMAIN/MSOUT

PRIMARY STRUCTURE DEFLECTIONS FOR ITERATION NO. 1

NODE	DX	DY	DZ	RX	RY	RZ
1	4.326075E-03	-6.480517E-04	-	-3.261673E-02	3.136625E-02	1.119598E-02
2	4.326779E-03	-	-	3.261643E-02	3.136703E-02	-1.119648E-02
3	2.163172E-03	-6.497842E-04	-3.341311E-01	4.202663E-02	8.846149E-08	-1.083284E-08
4	2.163285E-03	-	-3.341317E-01	-4.202688E-02	-8.178660E-08	6.696359E-10
5	-	-6.482343E-04	-	-3.261669E-02	-3.136659E-02	-1.119601E-02
6	-	-	-	3.261662E-02	-3.136692E-02	1.119654E-02

LOCDEF

FROM GETDIM,
NAME = RND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM,
NAME = DEFLECT, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = LOADS, I/O UNIT = 4, FILE = 1, ROWS = 6, COLUMNS = 6

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

PRIMARY STRUCTURE NODES ASSOCIATED WITH TITLE NO. 1

1 3
2 4

LOCDEF

HEXTIL/MULT

HEXTIL/SUB

PODSYM/QFSOL

PODSYM/REVERS

PODSYM/REVERS

PODSYM/QBSOL

FROM PUTLAB,
NAME = LOADS , I/O UNIT = 9, FILE = 1, ROWS = 1, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

FROM GETDIM,
NAME = LOADS , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = Q06 R 0H, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = Q06 R 0H, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM PUTLAB,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = DEFLECT , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB, NAME =	I/O UNIT = 18,	FILE = 1,	ROWS = 36,	COLUMNS = 1	PODSYM/QBSOL
FROM GETDIM, NAME = DEFLECT	I/O UNIT = 17,	FILE = 1,	ROWS = 36,	COLUMNS = 1	PODSYM/REVERS
FROM PUTLAB, NAME = DEFLECT	I/O UNIT = 19,	FILE = 1,	ROWS = 36,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 11,	FILE = 2,	ROWS = 12,	COLUMNS = 12	HEXTIL/MULT
FROM GETDIM, NAME = LOADS	I/O UNIT = 14,	FILE = 1,	ROWS = 12,	COLUMNS = 1	
FROM PUTLAB, NAME = QOC R OH	I/O UNIT = 18,	FILE = 1,	ROWS = 12,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 11,	FILE = 1,	ROWS = 36,	COLUMNS = 12	HEXTIL/MATB
FROM GETDIM, NAME = DEFLECT	I/O UNIT = 19,	FILE = 1,	ROWS = 36,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 14,	FILE = 2,	ROWS = 12,	COLUMNS = 1	HEXTIL/ADD
FROM GETDIM, NAME = QOC R OH	I/O UNIT = 18,	FILE = 1,	ROWS = 12,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 14,	FILE = 2,	ROWS = 12,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 17,	FILE = 1,	ROWS = 12,	COLUMNS = 1	HEXTIL/SUB
FROM GETDIM, NAME = NAMEA	I/O UNIT = 17,	FILE = 1,	ROWS = 12,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 13,	FILE = 3,	ROWS = 12,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 14,	FILE = 2,	ROWS = 12,	COLUMNS = 1	HEXTIL
FROM GETDIM, NAME = LOADS	I/O UNIT = 14,	FILE = 1,	ROWS = 12,	COLUMNS = 1	
FROM GETDIM, NAME = DEFLECT	I/O UNIT = 19,	FILE = 1,	ROWS = 36,	COLUMNS = 1	

TPS DISPLACEMENTS FOR FILE NO. 1 AND ITERATION NO. 1

WRDSP

NODE	X COMPONENT(U)	Y COMPONENT(V)	Z COMPONENT(W)
1	8.2468539E-03	3.4290364E-03	0.0
2	8.2476549E-03	-4.0770508E-03	0.0
3	2.1631829E-03	-5.9031099E-03	-3.3413112E-01
4	2.1632744E-03	5.2533597E-03	-3.3413166E-01
5	1.1206355E-02	-3.1693911E-03	-6.4287893E-03
6	1.1235740E-02	2.5537165E-03	-6.4288490E-03
7	1.2562264E-02	-3.2656526E-03	-3.4074122E-01
8	1.2592118E-02	2.5907967E-03	-3.4074211E-01
9	7.8355789E-02	-2.2639956E-03	-2.2288091E-02
10	7.8385651E-02	1.6488410E-03	-2.2289220E-02
11	7.9141676E-02	-2.310671E-03	-3.5662067E-01
12	7.917177E-02	1.6358714E-03	-3.5662168E-01
13	2.1242833E-01	-5.6218239E-04	-5.5700578E-02
14	2.1245879E-01	-5.1737763E-05	-5.5701707E-02
15	2.1253598E-01	-5.9235189E-04	-3.9003491E-01
16	2.1256644E-01	-8.1947990E-05	-3.9003628E-01

FROM GETDIM.
NAME = :08 WISO,

I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN2

SRAIN2

STRESSES FOR ISOLATOR AND ARRESTOR FOR FILE NO. 1 AND ITERATION NO. 1

LOCAL COORDINATES

LOCAL COORDINATES			STRESSES						
X	Y	Z	XX	YY	ZZ	XY	YZ	ZX	
ELEMENT NUMBER 1									
1	3.9434E 00	3.9434E 00	7.8867E-02	-9.5511E 01	-9.5435E 01	-9.9478E 01	7.0602E-03	-1.2265E-01	6.5377E-01
2	3.9434E 00	1.0566E 00	7.8867E-02	-9.5512E 01	-9.5435E 01	-9.9479E 01	-7.0602E-03	1.1873E-01	6.4862E-01
3	1.0566E 00	3.9434E 00	7.8867E-02	-9.4652E 01	-9.4603E 01	-9.8536E 01	7.0594E-03	8.1503E-01	-6.4361E-01
4	1.0566E 00	1.0566E 00	7.8867E-02	-9.4651E 01	-9.4602E 01	-9.8534E 01	-7.0610E-03	-8.0894E-01	-6.4864E-01
5	3.9434E 00	3.9434E 00	2.1132E-02	-9.6598E 01	-9.6460E 01	-1.0051E 02	2.5711E-02	-1.2265E-01	6.5440E-01
6	3.9434E 00	1.0566E 00	2.1132E-02	-9.6598E 01	-9.6460E 01	-1.0051E 02	-2.5716E-02	1.1873E-01	6.4926E-01
7	1.0566E 00	3.9434E 00	2.1132E-02	-9.7567E 01	-9.7531E 01	-1.0142E 02	2.5713E-02	8.1504E-01	-6.4298E-01
8	1.0566E 00	1.0566E 00	2.1132E-02	-9.7565E 01	-9.7530E 01	-1.0142E 02	-2.5715E-02	-8.0894E-01	-6.4801E-01
ELEMENT NUMBER 2									
1	3.9434E 00	3.9434E 00	8.8867E-01	-1.9575E 01	-5.8885E 01	-1.0116E 02	6.4080E-02	-1.7452E 01	-5.2952E 00
2	3.9434E 00	1.0566E 00	8.8867E-01	-1.9577E 01	-5.8886E 01	-1.0116E 02	-6.2203E-02	1.7446E 01	-5.3000E 00
3	1.0566E 00	3.9434E 00	8.8867E-01	-1.9815E 01	-5.9366E 01	-1.0114E 02	6.3521E-02	-1.6916E 01	5.2392E 00
4	1.0566E 00	1.0566E 00	8.8867E-01	-1.9815E 01	-5.9363E 01	-1.0114E 02	-6.2860E-02	1.6918E 01	5.2317E 00
5	3.9434E 00	3.9434E 00	3.1132E-01	-3.9947E 00	-3.5672E 01	-9.8824E 01	1.3052E-01	-1.7451E 01	-5.2235E 00
6	3.9434E 00	1.0566E 00	3.1132E-01	-3.9983E 00	-3.5673E 01	-9.8823E 01	-1.2878E-01	1.7447E 01	-5.2263E 00
7	1.0566E 00	3.9434E 00	3.1132E-01	-4.5420E 00	-3.6766E 01	-9.8867E 01	1.2955E-01	-1.6913E 01	5.3116E 00
8	1.0566E 00	1.0566E 00	3.1132E-01	-4.5439E 00	-3.6764E 01	-9.8863E 01	-1.2976E-01	1.6921E 01	5.3060E 00

FROM GETDIM,

NAME = :QB HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

FROM GETDIM,

NAME = AO AG-56, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1

SRAIN

STRESSES AND DIRECT STRAINS FOR TILE NO. 1 AND ITERATION NO. 1

MEM TEMP LOCAL COORDINATES * STRAINS * STRESSES * SRAIN

MEM	TEMP	LOCAL COORDINATES			STRAINS			STRESSES			* ZX					
		X	Y	Z	XX	YY	ZZ	XX	YY	ZZ		XY	YZ			
1	0.	2.50	2.50	0.05	-4.728E-04	7.615E-04	-6.520E-02	-9.608E	01	-9.601E	01	-1.198E-06	5.436E-04	2.851E-03		
2	0.	2.50	2.50	0.60	2.142E-04	9.719E-04	-1.587E-02	-1.198E	01	-4.767E	01	-1.000E	02	3.405E-04	5.484E-03	
3	0.	2.50	2.50	2.10	8.937E-05	4.440E-04	-1.671E-02	4.909E	00	1.910E	01	-1.000E	02	8.635E-04	-7.153E-04	4.530E-03

FROM GETDIM,

NAME = IQB HISQ, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN3

SRAIN3

STRESSES AND TOTAL STRAINS FOR COATING FOR TILE NO. 1 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES	* XX	STRAINS	* XY	STRESSES	* XY
3	0.	2.50	3.10	2.153E-05	1.021E-04	5.362E-08	6.022E 02 1.376E 03 4.290E-01

FROM GETDIM,
NAME = LOADS , I/O UNIT = 9, FILE = 1, ROWS = 1, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM PUTLAR,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

LOCDEF

PRIMARY STRUCTURE NODES ASSOCIATED WITH TILE NO. 2

LOCDEF

3 5
4 6FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 9, FILE = 1, ROWS = 1, COLUMNS = 1FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1FROM PUTLAB,
NAME = QOE R OH, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1FROM GETDIM,
NAME = NAMEA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1FROM GETDIM,
NAME = QOE R OH, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1FROM PUTLAB,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1FROM PUTLAB,
NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36FROM PUTLAB,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36FROM GETDIM,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1FROM PUTLAB,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1FROM GETDIM,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36FROM GETDIM,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1FROM PUTLAB,
NAME = DEFLECT , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

HEXTIL/MULT

HEXTIL/SUB

PODSYM/QFSOL

PODSYM/REVERS

PODSYM/REVERS

PODSYM/QBSOL

PODSYM/QBSOL

PODSYM/REVERS

HEXTIL/MULT

HEXTIL/MATB

HEXTIL/ADD

HEXTIL/SUB

HEXTIL

FROM PUTLAB,
NAME =

, I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = DEFLECT

, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = DEFLECT

, I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 11, FILE = 2, ROWS = 12, COLUMNS = 12

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = Q06 R 0H

, I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

FROM GETDIM,
NAME = DEFLECT

, I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA

, I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = Q06 R 0H

, I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA

, I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 13, FILE = 3, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA

, I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA

, I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = DEFLECT

, I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

TPS DISPLACEMENTS FOR TILE NO. 2 AND ITERATION NO. 1

WRDSP

NODE	X COMPONENT(U)	Y COMPONENT(V)	Z COMPONENT(W)
1	2.1631829E-03	-5.9031099E-03	-3.3413112E-01
2	2.1632744E-03	5.2533597E-03	-3.3413166E-01
3	-3.9208233E-03	3.4288501E-03	0.0
4	-3.9208643E-03	-4.0770769E-03	0.0
5	-8.2376003E-03	-3.2685506E-03	-3.4074193E-01
6	-8.2678869E-03	2.5878465E-03	-3.4074134E-01
7	-6.8817027E-03	-3.1719003E-03	-6.4289533E-03
8	-6.9123022E-03	2.5514343E-03	-6.4289533E-03
9	-7.4816883E-02	-2.3139825E-03	-3.5662138E-01
10	-7.4847221E-02	1.6327240E-03	-3.5662067E-01
11	-7.4031472E-02	-2.2667339E-03	-2.2289142E-02
12	-7.4062407E-02	1.6463303E-03	-2.228912E-02
13	-2.0821130E-01	-5.9640035E-04	-3.9003533E-01
14	-2.0824218E-01	-8.5862092E-05	-3.9003450E-01
15	-2.0810413E-01	-5.6571234E-04	-5.5701632E-02
16	-2.0813513E-01	-5.5138298E-05	-5.5700596E-02

FROM GFTOIM,

NAME = :QR HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN2

SRAIN2

STRESSES FOR ISOLATOR AND ARRESTOR FOR TILE NO. 2 AND ITERATION NO. 1

LOCAL COORDINATES

Z

Y

X

STRESSES

XY

YZ

ZX

ELEMENT NUMBER

1

1	3.9434E 00	3.9434E 00	7.8867E-02	-9.4652E 01	-9.4603E 01	-9.8555E 01	-7.0607E-03	8.1431E-01	6.4277E-01
2	3.9434E 00	1.0566E 00	7.8867E-02	-9.4654E 01	-9.4605E 01	-9.8558E 01	7.0587E-03	-8.0967E-01	6.4809E-01
3	1.0566E 00	3.9434E 00	7.8867E-02	-9.5507E 01	-9.5431E 01	-9.9474E 01	-7.0598E-03	-1.2349E-01	-6.5448E-01
4	1.0566E 00	1.0566E 00	7.8867E-02	-9.5516E 01	-9.5439E 01	-9.9483E 01	7.0598E-03	1.1790E-01	-6.4917E-01
5	3.9434E 00	3.9434E 00	2.1132E-02	-9.7566E 01	-9.7531E 01	-1.0142E 02	-2.5710E-02	8.1431E-01	6.4214E-01
6	3.9434E 00	1.0566E 00	2.1132E-02	-9.7568E 01	-9.7533E 01	-1.0142E 02	2.5716E-02	-8.0967E-01	6.4746E-01
7	1.0566E 00	3.9434E 00	2.1132E-02	-9.6594E 01	-9.6456E 01	-1.0051E 02	-2.5710E-02	-1.2350E-01	-6.5511E-01
8	1.0566E 00	1.0566E 00	2.1132E-02	-9.6602E 01	-9.6464E 01	-1.0052E 02	2.5717E-02	1.1789E-01	-6.4981E-01

ELEMENT NUMBER

2

1	3.9434E 00	3.9434E 00	8.8867E-01	-1.9830E 01	-5.9368E 01	-1.0114E 02	-6.4624E-02	-1.6914E 01	-5.2460E 00
2	3.9434E 00	1.0566E 00	8.8867E-01	-1.9828E 01	-5.9369E 01	-1.0114E 02	6.1560E-02	1.6919E 01	-5.2407E 00
3	1.0566E 00	3.9434E 00	8.8867E-01	-1.9592E 01	-5.8891E 01	-1.0116E 02	-6.3375E-02	-1.7449E 01	5.2981E 00
4	1.0566E 00	1.0566E 00	8.8867E-01	-1.9587E 01	-5.8890E 01	-1.0116E 02	6.2799E-02	1.7445E 01	5.3005E 00
5	3.9434E 00	3.9434E 00	3.1132E-01	-4.5518E 00	-3.6766E 01	-9.8864E 01	-1.3116E-01	-1.6916E 01	-5.3187E 00
6	3.9434E 00	1.0566E 00	3.1132E-01	-4.5497E 00	-3.6768E 01	-9.8866E 01	1.2762E-01	1.6917E 01	-5.3118E 00
7	1.0566E 00	3.9434E 00	3.1132E-01	-4.0064E 00	-3.5676E 01	-9.8823E 01	-1.3023E-01	-1.7451E 01	5.2251E 00
8	1.0566E 00	1.0566E 00	3.1132E-01	-4.0035E 00	-3.5676E 01	-9.8824E 01	1.2848E-01	1.7443E 01	5.2288E 00

FROM GETDIM,

NAME = :QB HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

FROM GETDIM,

NAME = AO AG-56, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1

SRAIN

STRESSES AND DIRECT STRAINS FOR FILE NO. 2 AND ITERATION NO. 1

MEM TEMP LOCAL COORDINATES * STRAINS * STRESSES

MEM	TEMP	X	Y	Z	XX	YY	ZZ	XY	YZ	ZX
1	0.	2.50	2.50	0.05	-4.728E-04	7.615E-04	-6.520E-02	-9.608E 01	-9.601E 01	-9.999E 01
2	0.	2.50	2.50	0.60	2.141E-04	9.720E-04	-1.587E-02	-1.199E 01	-4.768E 01	-1.072E-03
3	0.	2.50	2.50	2.10	8.922E-05	4.440E-04	-1.671E-02	4.899E 00	1.909E 01	-1.000E 02

FROM GETDIM,
NAME = :QB HISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN3

SRAIN3

STRESSES AND TOTAL STRAINS FOR COATING FOR TILE NO. 2 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES	* X	Y	Z	XX	YY	XY	* XX	STRESSES YY	* XY
-----	------	-------------------	--------	---	---	----	----	----	---------	----------------	---------

3 0. 2.50 2.50 3.10 2.142E-05 1.021E-04 -4.578E-08 6.010E 02 1.376E 03 -3.663E-01

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 9, FILE = 1, ROWS = 1, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = DEFLECT , I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = DEFLECT , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM,
NAME = DEFLECT , I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

PSTRES

LOCDEF

PSTRES

MID-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

MEMBER	COORDINATES		STRAINS		STRESSES	
	X	Y	EPS X	EPS Y	SIG X	SIG Y
1	2.5000E 00	2.5000E 00	-4.3266E-04	1.2978E-04	-4.3266E 03	-8.9070E-02
2	7.5000E 00	2.5000E 00	-4.3266E-04	1.2980E-04	-4.3266E 03	9.0829E-02

FROM GETDIM,
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM,
NAME = DEFLECT, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

PSTRES

TOP-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

MEMBER	COORDINATES		EPS		STRAINS		STRESSES	
	X	Y	EPS X	EPS Y	EPS XY	SIG X	SIG Y	SIG XY
1	2.5000E 00	2.5000E 00	-1.2168E-03	3.6504E-04	-4.2240E-08	-1.2168E 04	-2.5586E-02	-3.0172E-01
2	7.5000E 00	2.5000E 00	-1.2168E-03	3.6505E-04	7.8801E-08	-1.2168E 04	1.0746E-01	5.6287E-01

FROM GETDIM,
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM,
NAME = DEFLECT, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

PSTRES

BOTTOM-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

MEMBER	COORDINATES		STRAINS		STRESSES	
	X	Y	EPS X	EPS Y	SIG X	SIG Y
1	2.5000E 00	2.5000E 00	3.5153E-04	-1.0547E-04	3.5152E 03	-1.5112E-01
2	7.5000E 00	2.5000E 00	3.5152E-04	-1.0545E-04	3.5152E 03	7.5478E-02
						6.2473E-01

[illegible]

VERSION DATE
AUGUST 31, 1974

PREPARED BY
J. OJALVO, P. OGILVIE, A. LEVY AND F. AUSTIN
OF GRUMMAN AEROSPACE CORPORATION
FOR
THE LANGLEY RESEARCH CENTER

PROGRAM LISTING OF INPUT DATA CARDS

.....1.....2.....3.....4.....5.....6.....7.....8
 123456789012345678901234567890123456789012345678901234567890

DYNAMICS PROBLEM FOR PROGRAMMERS MANUAL

SEPTEMBER 5, 1974

2 3 1 1 1 2 1 1 1 1 1 7

0 10. 5. .25 .0001 .0001 .0005 0.
 0. .5 5.0 .1 .0001 .0001 .0005 0.
 2 1 1 1 1 1 1 1
 0. 0. 0. 2. .1 .1 .01
 1 1 1 .01
 10.E6 .3 .01
 10.E6 .3 .1
 60.E3 60.E3 6.E3 .5 .01
 20.E3 32.E3 32.E3 .005
 90. .49 .035
 .005

1 70. 60.E3

1 70. 6.E3

1 70. 32.E3

1 70. .5

1 70. .01

1 70. 0.

1 70. 12.E6

1 70. .25

1 70. 0.

A2 0

B2 2

C0 0

D0 4

0 1 0

0.

.....1.....2.....3.....4.....5.....6.....7.....8
 123456789012345678901234567890123456789012345678901234567890

CARDIN

OPTIONS

MODE NO. = 1

NO. REORTHOGONALIZATIONS = 1

NO. DESIRED MODES = 3

FREE VIBRATION MODES

CONVERGENCE PARAMETER = 5.0000E-02

MAXIMUM NO. ITERATIONS = 2

OVERHUNG ROTATORY MASS INERTIA ASSOCIATED WITH EACH STRINGER = 0.0

PRIMARY STRUCTURE STRESSES PRESENTED AFTER EACH ITERATION AT PLATE MID, TOP AND BOTTOM SURFACES

TILES ON PRIMARY STRUCTURE

TILE STRESSES PRESENTED AFTER EACH ITERATION

TILE NODE MAP REQUIRED

TILE ELEMENT MAP REQUIRED

TILE NODE COORDINATES REQUIRED

PRINT ELEMENT STIFFNESS MATRICES

PRINT ASSEMBLED STIFFNESS MATRICES

PRINT FILE DEBUGGING INFORMATION

COMPUTE STRESSES FOR ALL TILES

CARDIN

G E O M E T R Y

PLATE

 LX = 1.0000E 01 LY = 5.0000E 00 TP = 2.5000E-01
 STRINGERS

 Y1 = 0.0 ZS = 5.0000E-01 YS = 5.0000E 00 AS = 1.0000E-01
 IY1 = 1.0000E-04 IZ1 = 1.0000E-04 JX1 = 5.0000E-04 BETA S = 0.0
 TILES

 NXB = 2 NYB = 1
 T = 0.0 B1 = 0.0 T2 = 2.0000E 00
 TA = 1.0000E 00 T1 = 1.0000E-01 TC = 1.0000E-02
 NB1 = 0 NB2 = 1 ND2 = 1
 NT1 = 0 NT2 = 1

MPROP

M A T E R I A L P R O P E R T I E S

PLATE

 EP = 1.0000E 07 NU P = 3.0000E-01 GAMMA P = 1.0000E-02 ALPHA P = 0.0
 STRINGERS

 ES = 1.0000E 07 NU S = 3.0000E-01 GAMMA S = 1.0000E-01 ALPHA S = 0.0
 ARRESTOR

 EX = 6.0000E 04 EY = 6.0000E 04 EZ = 6.0000E 03
 NU XY = 5.0000E-01 NU YZ = 1.0000E-01 NU ZX = 1.0000E-02
 GXY = 2.0000E 04 GYZ = 3.2000E 04 GZX = 3.2000E 04
 GAMMA A = 5.0000E-03
 ALPHA X = 0.0 ALPHA Y = 0.0 ALPHA Z = 0.0
 ISOLATOR

 EI = 9.0000E 01 NU I = 4.9000E-01 GAMMA I = 3.5000E-02 ALPHA I = 0.0
 RSI

 GAMMA R = 5.0000E-03
 ALPHA RY / ALPHA RX = 0.0 ALPHA RZ / ALPHA RX = 0.0

TEMPERATURE DEPENDENT MATERIAL PROPERTIES

MPROP

	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY	TEMPERATURE	PROPERTY
1	ER	ALL	6.000E 04					
1	ER	ALL	6.000E 03					
1	GR	ALL	3.200E 04					
1	NU R	ALL	5.000E-01					
1	NU R	ALL	1.000E-02					
1	ALPHA R	ALL	0.0					
1	EC	ALL	1.200E 07					
1	NU C	ALL	2.500E-01					
1	ALPHA C	ALL	0.0					

GEOBC

FROM PUTLAR,
NAME = GEOMETRY, I/O UNIT = 10, FILE = 1, ROWS = 13, COLUMNS = 5

BOUND

BOUNDARY CONDITIONS

STRINGERS

EDGE PLATE OUT OF PLANE

PLATE IN PLANE

FREE

FREE

FREE

PINNED

FREE

FREE

U HELD, V FREE

PINNED

FREE

FREE

V HELD, U FREE

FREE

GEOBC

MEMBIN/MEMGEN

LOADIN

FROM PUTLAB,
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM PUTLAB,
NAME = MEMBERS, I/O UNIT = 17, FILE = 1, ROWS = 6, COLUMNS = 100

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = LOADS, I/O UNIT = 4, FILE = 1, ROWS = 6, COLUMNS = 6

INTEMP

R S I T E M P E R A T U R E S
- - - - -

NO STATIC THERMAL LOADING

UNIFORM TEMPERATURE OPTION

T REFERENCE = 0.0

DEL T U = T - T REF = 0.0

FROM PUTLAB,
NAME =

ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

MESH/MSHWRT

MESH

N D D E M A P

SURFACE 1

14 16

13 15

MESH

N O D E M A P

S U R F A C E 2

10	12
9	11

MESH

N O D E M A P

S U R F A C E 3

6	8
5	7

MESH

E L E M E N T M A P

LAYER 1
RSI

3

MESH

E L E M E N T M A P

LAYER 2
ARRESTOR

2

MESH

E L E M E N T M A P

LAYER 3
ISOLATOR

1

MESH

TILE MESH ELEMENT	T I L E N O D E S		
1	1	2	5
	3	4	7
2	5	6	9
	7	8	11
3	9	10	13
	11	12	15
		14	
		16	

MESH

TEMPERATURE

LOCAL TILE COORDINATES

NODE

Z

Y

X

1	0.0	0.0	0.0	0.0
2	0.0	5.00000E 00	0.0	0.0
3	5.00000E 00	0.0	0.0	0.0
4	5.00000E 00	5.00000E 00	0.0	0.0
5	0.0	0.0	1.00000E-01	0.0
6	0.0	5.00000E 00	1.00000E-01	0.0
7	5.00000E 00	0.0	1.00000E-01	0.0
8	5.00000E 00	5.00000E 00	1.00000E-01	0.0
9	0.0	0.0	1.10000E 00	0.0
10	0.0	5.00000E 00	1.10000E 00	0.0
11	5.00000E 00	0.0	1.10000E 00	0.0
12	5.00000E 00	5.00000E 00	1.10000E 00	0.0
13	0.0	0.0	3.10000E 00	0.0
14	0.0	5.00000E 00	3.10000E 00	0.0
15	5.00000E 00	0.0	3.10000E 00	0.0
16	5.00000E 00	5.00000E 00	3.10000E 00	0.0

LOAD VECTOR DUE TO APPLIED LOAD FOR

11. APPLIED NODAL CONCENTRATED LOADS
12. SURFACE TRACTIONS FOR HEXAHEDRA ELEMENTS

[illegible]

FROM PUTLAB.

NAME = A G-56, I/O UNIT = 12, FILE = 1, ROWS = 3, COLUMNS = 1

FROM PUTLAB,

NAME = A G-56, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1

FROM GETOIM,

NAME = ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

HEXEL/ISTAK

HEXEL

HEXEL

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 1- 6

8.5637012E 02	1.2583714E 01	6.2918506E 02	4.2768213E 02	-1.2080360E 01	3.1459253E 02
1.2583714E 01	8.5637012E 02	6.2918530E 02	1.2080362E 01	4.0251489E 02	6.0401758E 02
6.2918506E 02	6.2918530E 02	4.2785305E 04	3.1459277E 02	-6.0401782E 02	2.1392125E 04
4.2768213E 02	1.2080362E 01	3.1459277E 02	8.5637012E 02	-1.2583714E 01	6.2918506E 02
-1.2080360E 01	4.0251489E 02	-6.0401782E 02	8.5637012E 02	1.2583714E 01	6.2918530E 02
3.1459253E 02	6.0401758E 02	2.1392125E 04	6.2918506E 02	-6.2918530E 02	4.2785305E 04
-4.1535034E 02	6.0401793E 00	3.0200854E 02	-8.3019629E 02	6.2918549E 02	6.0401685E 02
-6.0401773E 00	-4.2793408E 02	6.2918457E 02	-8.3019629E 02	-8.3019629E 02	6.0401660E 02
-3.0200879E 02	6.2918530E 02	-2.1392383E 04	-6.0401758E 02	6.0401758E 02	-4.2784320E 04
-8.3019629E 02	6.2918530E 02	6.0401685E 02	4.1535034E 02	-6.0401733E 02	3.0200830E 02
6.2918520E 00	-8.3019629E 02	6.0401685E 02	6.0401793E 02	-4.2793408E 02	6.2918457E 02
-6.0401782E 02	-6.0401782E 02	-4.2784320E 04	3.0200879E 02	6.2918555E 02	-2.1392387E 04
4.0251440E 02	-1.2080363E 01	-6.0401758E 02	2.0100589E 02	1.2583717E 01	-3.0200879E 02
1.2080360E 01	4.2768188E 02	3.1459253E 02	1.2583714E 01	2.0100589E 02	3.0200854E 02
6.0401758E 02	3.1459277E 02	2.1392117E 04	3.0200854E 02	-3.0200903E 02	1.0695824E 04
2.0100587E 02	-1.2583716E 01	-3.0200879E 02	4.0251416E 02	1.2080363E 01	-6.0401733E 02
-1.2583714E 01	2.0100587E 02	-3.0200879E 02	-1.2080361E 01	4.2768184E 02	-3.1459253E 02
3.0200830E 02	3.0200854E 02	1.0695820E 04	6.0401733E 02	-3.1459253E 02	2.1392125E 04
-2.1409299E 02	-6.2918510E 00	-3.1459229E 02	-4.2793311E 02	6.0401764E 00	-6.2918433E 02
-6.2918520E 00	-2.1409299E 02	-3.1459229E 02	-6.0401764E 00	-4.1534937E 02	-3.0200830E 02
-3.1459229E 02	-3.1459253E 02	-1.0696297E 04	-6.2918506E 02	3.0200854E 02	-2.1392375E 04
-4.2793335E 02	-6.0401783E 02	-6.2918457E 02	-2.1409299E 02	6.2918530E 02	-3.1459229E 02
6.0401764E 00	-4.1534961E 02	3.0200830E 02	6.2918510E 00	-2.1409299E 02	3.1459229E 02
-6.2918506E 02	-3.0200879E 02	-2.1392367E 04	-3.1459229E 02	3.1459277E 02	-1.0696301E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 7-12

-4.1535034E 02	-6.0401773E 00	-3.0200879E 02	-8.3019629E 02	6.2918520E 00	-6.0401782E 02
6.0401793E 00	-4.2793408E 02	-6.2918530E 02	6.2918530E 00	-8.3019629E 02	-6.0401782E 02
3.0200854E 02	-6.2918457E 02	-2.1392383E 04	6.0401685E 02	6.0401685E 02	-4.2784320E 04
-8.3019629E 02	-6.2918539E 00	-6.0401758E 02	-4.1535034E 02	6.0401793E 00	-3.0200879E 02
6.0401685E 02	-8.3019629E 02	6.0401758E 02	-6.0401783E 02	-4.2793408E 02	6.2918555E 02
8.5637061E 02	-1.2583713E 01	-6.2918481E 02	4.2768213E 02	1.2080359E 01	-3.1459229E 02
-1.2583713E 01	8.5637036E 02	6.2918481E 02	-1.2080356E 01	4.0251489E 02	6.0401709E 02
-6.2918481E 02	6.2918481E 02	4.2785313E 04	-3.1459204E 02	-6.0401660E 02	2.1392125E 04
4.2768213E 02	-1.2080356E 01	-3.1459204E 02	8.5637085E 02	1.2583709E 01	-6.2918506E 02
1.2080359E 01	4.0251489E 02	-6.0401660E 02	1.2583709E 01	8.5637085E 02	-6.2918506E 02
-3.1459229E 02	6.0401709E 02	2.1392125E 04	-6.2918506E 02	-6.2918506E 02	4.2785320E 04
-2.1409314E 02	6.2918549E 00	3.1459277E 02	-4.2793384E 02	-6.0401793E 00	6.2918555E 02
6.2918501E 00	-2.1409314E 02	-3.1459253E 02	6.0401764E 00	-4.1535010E 02	-3.0200903E 02
3.1459229E 02	6.0401773E 00	1.0696305E 04	6.2918457E 02	3.0200830E 02	-2.1392402E 04
-4.2793335E 02	6.0401773E 00	6.2918530E 02	-2.1409314E 02	-6.2918520E 00	3.1459277E 02
-6.0401754E 00	-4.1534961E 02	3.0200879E 02	-6.2918510E 00	-2.1409314E 02	3.1459277E 02
6.2918457E 02	3.0200830E 02	-2.1392387E 04	3.1459229E 02	3.1459229E 02	-1.0696305E 04
4.0251392E 02	1.2080356E 01	6.0401660E 02	2.0100597E 02	-1.2583709E 01	3.0200854E 02
-1.2080356E 01	4.2768091E 02	3.1459229E 02	-1.2583706E 01	2.0100597E 02	3.0200854E 02
-6.0401636E 02	3.1459204E 02	2.1392129E 04	-3.0200830E 02	-3.0200830E 02	1.0695820E 04
2.0100594E 02	1.2583713E 01	3.0200879E 02	4.0251440E 02	-1.2080360E 01	6.0401685E 02
1.2583709E 01	2.0100595E 02	-3.0200854E 02	1.2080353E 01	4.2768184E 02	-3.1459253E 02
-3.0200830E 02	3.0200854E 02	1.0695820E 04	-6.0401636E 02	-3.1459229E 02	2.1392133E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 13-18

4.0251440E 02	1.2080360E 01	6.0401758E 02	2.0100587E 02	-1.2583714E 01	3.0200830E 02
-1.2080363E 01	4.2768188E 02	3.1459277E 02	-1.2583716E 01	2.0100587E 02	3.0200854E 02
-6.0401758E 02	3.1459253E 02	2.1392117E 04	-3.0200879E 02	-3.0200879E 02	1.0695820E 04
2.0100589E 02	1.2583714E 01	3.0200854E 02	4.0251416E 02	-1.2080361E 01	6.0401733E 02
1.2583717E 01	2.0100589E 02	3.0200903E 02	1.0695824E 02	4.2768164E 02	3.1459253E 02
-3.0200879E 02	3.0200854E 02	1.0695824E 02	-6.0401733E 02	-3.1459253E 02	2.1392125E 04
2.1409314E 02	6.2918501E 00	3.1459229E 02	-4.2793335E 02	-6.0401754E 00	6.2918457E 02
6.2918549E 00	-2.1409314E 02	3.1459253E 02	6.0401773E 00	-4.1534961E 02	3.0200830E 02
3.1459277E 02	-3.1459253E 02	1.0696305E 04	6.2918530E 02	3.0200879E 02	-2.1392387E 04
-4.2793338E 02	6.0401764E 00	6.2918457E 02	-2.1409314E 02	-6.2918510E 00	3.1459229E 02
-6.0401793E 00	-4.1535010E 02	3.0200830E 02	-6.2918520E 02	-2.1409314E 02	3.1459229E 02
6.2918555E 02	-3.0200903E 02	-2.1392402E 04	3.1459277E 02	3.1459277E 02	-1.0696305E 04
8.5637036E 02	-1.2583716E 01	6.2918555E 02	4.2768164E 02	1.2080363E 01	-3.1459253E 02
-1.2583716E 01	8.5637036E 02	6.2918530E 02	-1.2080362E 01	4.0251440E 02	6.0401758E 02
-6.2918555E 02	6.2918530E 02	4.2768164E 02	-3.1459229E 02	-6.0401733E 02	2.1392133E 04
4.2768164E 02	-1.2080362E 01	3.1459229E 02	8.5637012E 02	1.2583714E 01	-6.2918481E 02
1.2080363E 01	4.0251440E 02	-6.0401733E 02	1.2583714E 01	8.5637012E 02	-6.2918506E 02
-3.1459253E 02	6.0401758E 02	2.1392133E 04	-6.2918481E 02	-6.2918506E 02	4.2768164E 02
-4.1534937E 02	-6.0401726E 00	-3.0200806E 02	-8.3019604E 02	6.2918472E 00	-6.0401636E 02
6.0401773E 00	-4.2793311E 02	-6.2918433E 02	6.2918501E 00	-8.3019604E 02	-6.0401636E 02
3.0200879E 02	-6.2918530E 02	-2.1392383E 04	6.0401685E 02	6.0401733E 02	-4.2784332E 04
-8.3019629E 02	-6.2918510E 00	-6.0401660E 02	4.1534937E 02	6.0401764E 00	-3.0200830E 02
-6.2918530E 00	-8.3019629E 02	6.0401636E 02	-6.0401754E 00	-4.2793311E 02	6.2918433E 02
6.0401733E 02	-6.0401733E 02	-4.2784320E 04	3.0200854E 02	6.2918506E 02	-2.1392383E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 1

COLUMNS 19-24

-2.1409299E 02	-6.2918520E 00	-3.1459229E 02	-4.2793335E 02	6.0401764E 00	-6.2918506E 02
-6.2918510E 00	-2.1409299E 02	-3.1459253E 02	-6.0401783E 00	-4.1534961E 02	-3.0200879E 02
-3.1459229E 02	-6.0401764E 00	-1.0696297E 04	-6.2918457E 02	3.0200830E 02	-2.1392367E 04
-4.2793311E 02	-6.0401764E 00	-6.2918506E 02	-2.1409299E 02	6.2918510E 00	-3.1459229E 02
6.0401764E 00	-4.1534937E 02	3.0200854E 02	6.2918530E 00	-2.1409299E 02	3.1459277E 02
-6.2918433E 02	-3.0200830E 02	-2.1392375E 04	-3.1459229E 02	3.1459229E 02	-1.0696301E 04
4.0251392E 02	-1.2080356E 01	-6.0401636E 02	2.0100594E 02	1.2583709E 01	-3.0200830E 02
1.2080356E 01	4.2768091E 02	3.1459204E 02	1.2583713E 01	2.0100595E 02	3.0200854E 02
6.0401660E 02	3.1459229E 02	2.1392129E 04	3.0200879E 02	-3.0200854E 02	1.0695820E 04
2.0100597E 02	-1.2583706E 01	3.0200830E 02	4.0251440E 02	1.2080353E 01	-6.0401636E 02
-1.2583709E 01	2.0100597E 02	-3.0200830E 02	-1.2080360E 01	4.2768164E 02	-3.1459229E 02
3.0200854E 02	3.0200854E 02	1.0695820E 04	6.0401685E 02	-3.1459253E 02	2.1392133E 04
-4.1534937E 02	6.0401773E 00	3.0200879E 02	-8.3019629E 02	6.2918530E 00	6.0401733E 02
-6.0401726E 00	-4.2793311E 02	-6.2918530E 02	-6.2918510E 00	-8.3019629E 02	-6.0401733E 02
-3.1409206E 02	-6.2918433E 02	-2.1392383E 02	-6.0401660E 02	6.0401636E 02	-4.2784320E 04
-8.3019604E 02	6.2918501E 00	6.0401685E 02	-4.1534937E 02	-6.0401754E 00	3.0200854E 02
6.2918472E 00	-8.3019604E 02	6.0401733E 02	6.0401764E 00	-4.2793311E 02	6.2918506E 02
-6.0401636E 02	-6.0401636E 02	-4.2784332E 04	-3.0200830E 02	6.2918433E 02	-2.1392383E 04
8.5636963E 02	1.2583703E 01	6.2918408E 02	4.2768091E 02	-1.2080350E 01	3.1459204E 02
1.2583703E 01	8.5636967E 02	6.2918433E 02	1.2080357E 01	4.0251367E 02	6.0401636E 02
6.2918408E 02	6.2918433E 02	4.2785309E 04	3.1459229E 02	-6.0401636E 02	2.1392121E 04
4.2768091E 02	1.2080357E 01	3.1459229E 02	8.5636963E 02	-1.2583711E 01	6.2918457E 02
-1.2080350E 01	4.0251367E 02	-6.0401636E 02	-1.2583711E 01	8.5636967E 02	-6.2918433E 02
3.1459204E 02	6.0401636E 02	2.1392121E 04	6.2918457E 02	-6.2918433E 02	4.2785293E 04

ISTAK

ELEMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER 1

1	8.5637012E 02	2	1.2583714E 01	3	8.5637012E 02	4	6.2918506E 02	5	6.2918506E 02	6	4.2785305E 04
7	4.2785305E 02	8	1.2080362E 01	9	3.1459277E 02	10	8.5637012E 02	11	-1.2080360E 01	12	4.0251489E 02
13	6.0401782E 02	14	1.2583714E 01	15	8.5637012E 02	16	3.1459253E 02	17	6.0401758E 02	18	2.1392125E 04
19	6.2918506E 02	20	-6.2918506E 02	21	4.2785305E 04	22	6.0401758E 02	23	-6.0401758E 02	24	3.0200854E 04
124	-8.3019629E 02	125	6.2918549E 00	126	6.0401685E 02	127	6.0401685E 02	128	-6.0401758E 02	129	4.2785305E 04
139	-2918457E 02	140	-6.2918539E 00	141	-8.3019629E 02	142	6.0401660E 02	143	-6.0401660E 02	144	8.5637036E 02
154	-3.0200879E 02	155	-6.2918530E 02	156	-2.1392125E 04	157	-6.0401758E 02	158	6.0401758E 02	159	4.2784320E 04
169	-6.2918481E 02	170	6.2918481E 02	171	4.2785305E 04	172	8.3019629E 02	173	-8.3019629E 02	174	6.0401685E 02
82	-4.1535034E 02	83	6.0401783E 00	84	3.0200830E 02	85	3.1459253E 02	86	6.0401685E 02	87	3.1459204E 02
91	8.5637085E 02	92	6.2918520E 00	93	-8.3019629E 02	94	6.0401685E 02	95	6.0401758E 02	96	4.2793408E 02
97	6.2918457E 02	98	1.2080359E 01	99	4.0251489E 02	100	8.5637012E 02	101	1.2583709E 01	102	8.5637085E 02
106	-6.0401782E 02	107	6.0401782E 02	108	-4.2784320E 04	109	-3.0200879E 02	110	6.2918555E 02	111	-2.1392387E 04
135	-3.1459229E 02	136	6.0401709E 02	137	2.1392125E 04	138	6.0401709E 02	139	-6.2918506E 02	140	4.2785305E 04
22	4.0251440E 02	23	-1.2080363E 01	24	-6.0401758E 02	25	2.0100589E 02	26	1.2583717E 01	27	-3.0200879E 02
127	-2.1409314E 02	128	6.2918549E 00	129	6.0401758E 02	130	6.0401758E 02	131	-6.0401758E 02	132	6.2918555E 02
28	8.5637036E 02	29	1.2080360E 01	30	4.2785305E 04	31	3.1459253E 02	32	1.2583714E 01	33	2.0100589E 02
34	3.0200854E 02	35	-1.2583716E 01	36	8.5637036E 02	37	6.0401758E 02	38	3.1459277E 02	39	2.1392117E 04
113	-3.0200903E 02	114	-3.0200903E 02	115	1.0695824E 04	116	3.1459229E 02	117	-3.1459229E 02	118	-1.0696305E 04
40	3.0200854E 02	41	3.0200830E 02	42	1.0695824E 04	43	-6.2918555E 02	44	6.2918530E 02	45	4.2785332E 04
87	6.2918457E 02	88	3.0200830E 02	89	-1.2583716E 01	90	6.0401773E 02	91	-6.0401773E 02	92	6.0401733E 04
130	-4.2793335E 02	131	6.0401773E 02	132	6.0401773E 02	133	6.0401773E 02	134	-6.0401773E 02	135	3.1459277E 02
52	4.2768164E 02	53	-1.2080362E 01	54	3.1459229E 02	55	8.5637012E 02	56	-1.2583714E 01	57	2.0100587E 02
58	-3.0200879E 02	59	-1.2080361E 01	60	4.2768164E 02	61	-3.1459253E 02	62	1.2583714E 01	63	2.0100589E 02
164	3.0200879E 02	64	6.0401733E 02	65	6.0401733E 02	66	3.1459277E 02	67	3.0200830E 02	68	3.0200830E 02
64	-6.0401733E 02	65	1.2583714E 01	66	8.5637012E 02	67	3.1459253E 02	68	3.0200830E 02	69	1.0695820E 04
70	6.0401733E 02	71	-3.1459253E 02	72	2.1392125E 04	73	-3.1459253E 02	74	6.0401758E 02	75	2.1392133E 04
90	3.1459229E 02	91	3.1459229E 02	92	1.0696305E 04	93	-3.1459253E 02	94	-3.0200830E 02	95	-2.1392387E 04
76	-6.2918481E 02	77	-6.2918506E 02	78	4.2785305E 04	79	4.2785305E 04	80	6.0401758E 02	81	3.1459229E 02
235	-4.2793311E 02	236	6.0401764E 00	237	-6.2918433E 02	238	3.0200854E 02	239	-6.0401726E 00	240	3.0200806E 02
244	2.0100597E 02	245	-1.2583709E 01	246	3.0200854E 02	247	4.0251392E 02	248	1.2080356E 01	249	6.0401660E 02
241	-8.3019604E 02	242	6.2918472E 00	243	-6.0401636E 02	244	4.2785305E 04	245	-6.0401726E 00	246	-3.0200806E 02
256	-3.1459229E 02	257	-6.0401764E 00	258	-4.1534937E 02	259	-3.0200830E 02	260	-6.0401726E 00	261	-2.1409299E 02
271	3.1459229E 02	272	6.2918306E 01	273	6.2918306E 01	274	2.0100597E 02	275	1.2583703E 01	276	4.2768091E 02
262	-6.2918433E 02	263	6.2918501E 00	264	-8.3019604E 02	265	6.0401636E 02	266	6.0401773E 00	267	-4.2793311E 02
277	-3.1459229E 02	278	3.1459253E 02	279	-1.0696297E 04	280	-6.2918506E 02	281	3.0200854E 02	282	-2.1392375E 04
292	-6.0401636E 02	293	3.1459204E 02	294	2.1392129E 04	295	-3.0200830E 02	296	-3.0200830E 02	297	1.0695820E 04
283	3.0200879E 02	284	-6.2918530E 02	285	-2.1392383E 04	286	6.0401685E 02	287	6.0401733E 02	288	-4.2784332E 04
298	6.2918408E 02	299	6.2918408E 02	300	4.2785309E 04	301	4.2785309E 04	302	-6.0401758E 02	303	-6.0401660E 02
175	-2.1409299E 02	176	6.2918530E 00	177	3.1459229E 02	178	-8.3019629E 02	179	-6.2918510E 00	180	-6.0401660E 02
184	4.0251440E 02	185	-1.2080360E 01	186	6.0401685E 02	187	2.0100594E 02	188	1.2583713E 01	189	3.0200879E 02
181	-4.1534937E 02	182	6.0401764E 00	183	-3.0200830E 02	184	3.0200830E 02	185	6.0401758E 02	186	3.1459229E 02
190	8.5636963E 02	191	6.0401764E 00	192	-4.1534937E 02	193	4.0200830E 02	194	6.2918510E 00	195	-2.1409299E 02
196	3.1459229E 02	197	6.2918530E 01	198	-8.3019629E 02	199	6.0401636E 02	200	-6.0401758E 02	201	4.2793311E 02
205	-3.1459253E 02	206	1.2583709E 01	207	2.0100595E 02	208	-3.0200854E 02	209	1.2080353E 01	210	-4.2793311E 02
202	6.2918433E 02	203	-1.2080350E 01	204	6.2918433E 02	205	6.0401636E 02	206	-6.0401758E 02	207	8.5636987E 02
211	-6.2918506E 02	212	-3.0200879E 02	213	-2.1392367E 04	214	-3.1459229E 02	215	3.1459277E 02	216	-1.0696301E 04
226	-3.0200830E 02	227	3.0200854E 02	228	1.0695820E 04	229	-6.0401636E 02	230	6.2918506E 02	231	-2.1392133E 04
217	6.0401733E 02	218	-6.0401733E 02	219	-4.2784320E 04	220	3.0200854E 02	221	6.2918506E 02	222	-2.1392387E 04
252	3.1459204E 02	253	6.0401636E 02	254	2.1392121E 04	255	6.2918457E 02	256	-6.2918433E 02	257	4.2785293E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 1- 6

1.0035581E 05	5.5264766E 03	1.5297844E 04	4.6844590E 04	-2.1931641E 03	7.6489219E 03
5.5264766E 03	1.0138294E 05	1.7204641E 04	2.1931646E 03	3.5283172E 04	-9.4618945E 03
1.5297844E 04	1.7204641E 04	2.6371676E 04	7.6489219E 03	9.4618945E 03	7.8525000E 03
4.6844590E 04	2.1931646E 03	7.6489219E 03	1.0035575E 05	-5.5264727E 03	1.5297844E 04
-2.1931641E 03	3.5283172E 04	9.4618945E 03	-5.5264727E 03	1.0138288E 05	-1.7204641E 04
7.6489219E 03	9.4618945E 03	7.8525000E 03	1.5297844E 04	1.7204641E 04	2.6371672E 04
-4.3244105E 04	1.0965818E 03	-5.6843358E 03	-8.3154813E 04	-2.7632400E 03	-1.1368691E 04
-1.0965811E 03	-4.9024624E 04	-1.7204633E 04	-2.7632397E 03	-8.2641250E 04	9.4618945E 03
5.6843320E 03	1.7204641E 04	1.0519156E 04	1.1368684E 04	-9.4618945E 03	-1.5705055E 04
-8.3154875E 04	2.7632390E 03	-1.1368691E 04	-4.3244109E 04	-1.0965811E 03	-5.6843358E 03
2.7632390E 03	-8.2641313E 04	-9.4618945E 03	1.0965818E 03	4.9024824E 04	1.7204637E 04
1.1368680E 04	9.4618945E 03	-1.5705059E 04	5.6843281E 03	1.7204637E 04	-1.0519156E 04
3.6310273E 04	-2.1931653E 03	1.1368695E 04	1.6488465E 04	5.5264766E 03	5.6843359E 03
-1.1368688E 04	4.7358148E 04	8.6023164E 03	5.5264766E 03	1.5974898E 04	-4.7309492E 03
-2.1931638E 04	8.6023125E 03	7.8525039E 03	-5.6843438E 03	4.7309414E 03	1.2596174E 03
1.6488469E 04	-5.5264727E 03	5.6843359E 03	3.6310281E 04	2.1931648E 03	1.1368695E 04
-5.5264727E 03	1.5974895E 04	4.7309453E 03	-2.1931648E 03	4.7358156E 04	-8.6023086E 04
-5.6843438E 03	-4.7309453E 03	1.2596191E 03	-1.1368688E 04	-8.6023086E 03	7.8524961E 03
-2.5088926E 04	-2.7632395E 03	-7.6489180E 03	-4.8511242E 04	1.0965806E 03	-1.5297852E 04
-2.7632388E 03	-2.5345711E 04	-8.6023125E 03	-1.0965818E 03	4.2987316E 04	4.7309453E 03
-7.6489141E 03	-8.6023086E 03	-6.5929102E 03	-1.5297840E 04	-4.7309375E 03	-1.0519145E 04
-4.8511234E 04	-1.0965808E 03	-1.5297848E 04	-2.5088926E 04	2.7632395E 03	-7.6489180E 03
1.0965815E 03	-4.2987305E 04	-4.7309492E 03	2.7632390E 03	-2.5345707E 04	8.6023164E 03
-1.5297844E 04	4.7309414E 03	-1.0519152E 04	-7.6489180E 03	8.6023047E 03	-6.5929102E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 7-12

-4.3244105E 04	-1.0965811E 03	5.6843320E 03	-8.3154875E 04	2.7632390E 03	1.1368680E 04
1.0965818E 03	-4.9024824E 04	-1.7204641E 04	2.7632390E 03	-8.2641313E 04	9.4618945E 03
-5.6843438E 03	-1.7204633E 04	-1.0519156E 04	-1.1368691E 04	-9.4618945E 03	-1.5705059E 04
-8.3154813E 04	-2.7632397E 03	1.1368684E 04	-4.3244109E 04	1.0965818E 03	5.6843281E 03
-2.7632400E 03	-8.2641250E 04	-9.4618945E 03	-1.0965811E 03	4.9024824E 04	1.7204637E 04
-1.1368691E 04	9.4618945E 03	-1.5705055E 04	-5.6843438E 03	1.7204637E 04	-1.0519156E 04
1.0035575E 05	-5.526470E 03	-1.5297848E 04	4.6844594E 04	2.1931655E 03	-7.6489141E 03
-5.5264570E 03	1.0138294E 05	1.7204637E 04	-2.1931621E 03	3.5283156E 04	-9.4618906E 03
-1.5297848E 04	1.7204637E 04	2.6371684E 04	-7.6489180E 03	9.4618945E 03	7.8525195E 03
4.6844594E 04	-2.1931621E 03	7.6489180E 03	1.0035588E 05	5.5264570E 03	-1.5297848E 04
2.1931655E 03	3.5283156E 04	9.4618945E 03	5.5264570E 03	1.0138300E 05	-1.7204645E 04
-7.6489141E 03	-9.4618906E 03	7.8525195E 03	-1.5297848E 04	-1.7204645E 04	2.6371680E 04
-2.5088941E 04	2.7632397E 03	7.6489102E 03	-4.8511281E 04	-1.0965815E 03	1.5297848E 04
2.7632395E 03	-2.5345723E 04	-8.6023086E 03	1.0965808E 03	4.2987352E 04	4.7309414E 03
7.6489258E 03	-8.6023125E 03	-6.5929141E 03	1.5297848E 04	-4.7309492E 03	-1.0519160E 04
-4.8511262E 04	1.0965806E 03	-1.5297844E 04	-2.5088945E 04	2.7632390E 03	-7.6489063E 03
-1.0965813E 03	-4.2987332E 04	-4.7309375E 03	-2.7632388E 04	-2.5345727E 04	8.6023047E 03
1.5297844E 04	4.7309453E 03	-1.0519152E 04	7.6489258E 03	8.6023164E 03	-6.5929141E 03
3.6310289E 04	2.1931633E 03	-1.1368676E 04	1.6488496E 04	-5.5264531E 03	-5.6843320E 03
-2.1931655E 03	4.7358168E 04	8.6023047E 03	-5.5264570E 03	1.5974926E 04	-4.7309414E 03
1.1368676E 04	8.6023047E 03	7.8525078E 03	5.6843359E 03	4.7309492E 03	1.2596208E 03
1.6488484E 04	5.5264570E 03	-5.6843359E 03	3.6310305E 04	-2.1931638E 03	-1.1368680E 04
5.5264609E 03	1.5974918E 04	4.7309453E 03	2.1931641E 03	4.7358180E 04	-8.6023047E 03
5.6843359E 03	-4.7309453E 03	1.2596189E 03	1.1368680E 04	-8.6023086E 03	7.8525156E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 13-18

3.6310273E 04	2.1931638E 03	-1.1368688E 04	1.6488469E 04	-5.5264727E 03	-5.6843438E 03
-2.1931653E 03	4.7358148E 04	8.6023125E 03	-5.5264727E 03	1.5974895E 04	-4.7309453E 03
1.1368695E 04	8.6023164E 03	7.8525039E 03	5.6843359E 03	4.7309453E 03	1.2596191E 03
1.6488465E 04	5.5264766E 03	-5.6843438E 03	3.6310281E 04	-2.1931648E 03	-1.1368688E 04
5.5264766E 03	1.5974898E 04	4.7309414E 03	2.1931648E 03	4.7358156E 04	-8.6023086E 03
5.6843359E 03	-4.7309492E 03	1.2596174E 03	1.1368695E 04	-8.6023086E 03	7.8524961E 03
-2.5088941E 04	2.7632395E 03	7.6489258E 03	-4.8511262E 04	-1.0965813E 03	1.5297844E 04
2.7632397E 03	-2.5345732E 04	-6.6023125E 03	1.0965808E 03	4.7309432E 03	4.7309453E 03
7.6489102E 03	-8.6023086E 03	-6.5929141E 03	1.5297844E 04	-4.7309375E 03	-1.0519152E 04
-4.8511281E 04	1.0965808E 03	1.5297848E 04	-2.5088945E 04	-2.7632388E 03	7.6489258E 03
-1.0965815E 03	4.2987352E 04	-4.7309492E 03	-2.7632390E 03	-2.5345727E 04	8.6023164E 03
1.5297848E 04	4.7309414E 03	-1.0519160E 03	7.6489063E 03	8.6023047E 03	-6.5929141E 03
1.0035575E 05	-5.5264688E 03	-1.5297863E 04	4.6844613E 04	2.1931658E 03	-7.6489180E 03
-5.5264688E 03	1.0138288E 05	1.7204637E 04	-2.1931645E 03	3.5283184E 04	-9.4618906E 03
-1.5297863E 04	1.7204637E 04	2.6371676E 04	-7.6489219E 03	9.4618945E 03	7.8525000E 03
4.6844613E 04	-2.1931646E 03	-7.6489219E 03	1.0035563E 05	5.5264688E 03	-1.5297852E 04
2.1931658E 03	3.5283184E 04	9.4618945E 03	5.5264688E 03	1.0138281E 05	-1.7204637E 04
-7.6489180E 03	-9.4618906E 03	7.8525000E 03	-1.5297852E 04	-1.7204637E 04	2.6371672E 04
-4.3244109E 04	-1.0965798E 03	5.6843438E 03	-8.3154688E 03	2.7632388E 03	1.1368688E 04
1.0965820E 03	-4.9024828E 04	-1.7204629E 04	2.7632388E 03	-8.2641063E 04	9.4618906E 03
-5.6843281E 03	-1.7204633E 04	-1.0519145E 04	-1.1368672E 04	-9.4618906E 03	-1.5705055E 04
-8.3154750E 04	-2.7632395E 03	1.1368688E 04	-4.3244113E 04	1.0965806E 03	5.6843398E 03
-2.7632400E 03	-8.2641125E 04	-9.4618906E 03	-1.0965806E 03	-4.9024832E 04	1.7204629E 04
-1.1368680E 04	9.4618945E 03	-1.5705051E 04	-5.6843320E 03	1.7204625E 04	-1.0519145E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 2

COLUMNS 19-24

-2.5088926E 04	-2.7632388E 03	-7.6489141E 03	-4.8511234E 04	1.0965815E 03	-1.5297844E 04
-2.7632395E 03	-2.5345711E 04	-8.6023086E 03	-1.0965808E 03	-4.73097305E 04	4.7309414E 03
-7.6489180E 03	-8.6023125E 03	-6.5929102E 03	-1.5297848E 04	-4.7309492E 03	-1.0519152E 04
-4.8511242E 04	-1.0965818E 03	-1.5297840E 04	-2.5088926E 04	2.7632390E 03	-7.6489180E 03
1.0965806E 03	-4.2987316E 04	-4.7309375E 03	2.7632395E 03	-2.5345707E 04	8.6023047E 03
-1.5297852E 04	4.7309453E 03	-1.0519145E 04	-7.6489180E 03	8.6023164E 03	-6.5929102E 03
3.6310289E 04	-2.1931655E 03	1.1368676E 04	1.6488484E 04	5.5264609E 03	5.6843359E 03
2.1931633E 03	4.7358168E 04	8.6023047E 03	5.5264570E 03	1.5974918E 04	-4.7309453E 03
-1.1368676E 04	8.6023047E 03	7.8525078E 03	-5.6843359E 03	4.7309453E 03	1.2596189E 03
1.6488496E 04	-5.5264570E 03	5.6843359E 03	3.6310305E 04	4.7309453E 03	1.1368680E 04
-5.5264531E 03	1.5974926E 04	4.7309492E 03	-2.1931638E 03	4.7358160E 04	-8.6023086E 03
-5.6843320E 03	-4.7309414E 03	1.2596208E 03	-1.1368680E 04	-8.6023047E 03	7.8525156E 03
-4.3244109E 04	1.0965820E 03	-5.6843281E 03	-8.3154750E 04	-2.7632400E 03	-1.1368680E 04
-1.0965798E 03	-4.9024828E 04	-1.7204633E 04	-2.7632395E 03	-8.2641125E 04	9.4618945E 03
5.6843438E 03	-1.7204629E 04	-1.0519145E 04	1.1368688E 04	-9.4618906E 03	-1.5705051E 04
-8.3154688E 04	2.7632388E 03	-1.1368672E 04	-4.3244113E 04	-1.0965806E 03	-5.6843320E 03
2.7632383E 03	-8.2641063E 04	-9.4618906E 03	1.0965806E 03	-4.9024832E 04	1.7204625E 04
1.1368688E 04	9.4618906E 03	-1.5705055E 04	5.6843398E 03	1.7204629E 04	-1.0519145E 04
1.0035550E 05	5.5264531E 03	1.5297836E 04	4.6844586E 04	-2.1931631E 03	7.6489102E 03
5.5264531E 03	1.0138269E 05	1.7204625E 04	2.1931658E 03	3.5283160E 04	-9.4618828E 03
1.5297836E 04	1.7204625E 04	2.6371664E 04	7.6489102E 03	9.461887E 03	7.8525039E 03
4.6844586E 04	2.1931658E 03	7.6489102E 03	1.0035556E 05	-5.5264531E 03	1.5297848E 04
-2.1931631E 03	3.5283160E 04	9.4618867E 03	-5.5264531E 03	1.0138269E 05	-1.7204629E 04
7.6489102E 03	-9.4618828E 03	7.8525039E 03	1.5297848E 04	-1.7204629E 04	2.6371656E 04

ELEMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER 2

91	1.0033581E 05	104	5.5264766E 03	105	1.0138294E 05	118	1.5297844E 04	119	1.7204641E 04	120	2.6371676E 04
133	4.6844590E 04	134	2.1931646E 03	135	7.6489219E 03	136	1.0035575E 05	149	-2.1931641E 03	150	3.5283172E 04
151	9.4618945E 03	152	-5.5264727E 03	153	1.0138288E 05	166	7.6489219E 03	167	-9.4618945E 03	168	7.8525000E 03
169	1.5297844E 04	170	-1.7204641E 04	171	2.6371672E 04	381	1.0335575E 05	382	1.0965818E 03	383	-5.6843438E 03
384	-8.3154813E 04	385	-2.7632400E 03	386	-1.1368691E 04	396	1.0035575E 05	404	-1.0965818E 03	405	-4.9024824E 04
406	-1.7204633E 04	407	-2.7632397E 03	408	-8.2641250E 04	409	9.4618945E 03	419	-5.5264570E 03	420	1.0138294E 05
427	5.6844320E 03	428	-1.7204641E 04	429	1.0519156E 04	430	1.1368684E 04	431	-9.4618945E 03	432	-1.5705055E 04
442	-1.5297848E 04	443	1.7204637E 04	444	2.6371684E 04	312	-8.3154875E 04	313	2.7632390E 03	314	-1.1368691E 04
315	-4.3244109E 04	316	-1.0965811E 03	317	-5.6843438E 03	393	4.6844594E 04	416	-2.1931621E 03	439	-7.6489180E 03
324	1.0035588E 05	335	2.7632390E 03	336	-8.2641313E 04	337	9.4618945E 03	338	1.0965818E 03	339	-4.9024824E 04
340	1.7204637E 04	394	2.1931653E 03	417	3.5283156E 04	440	9.4618945E 03	347	5.5264570E 03	348	1.0138300E 05
358	1.1368680E 04	359	9.4618945E 03	360	-1.5705059E 04	361	5.6843281E 03	362	1.7204637E 04	363	-1.0519156E 04
395	-7.6489141E 03	418	-9.4618906E 03	441	7.8525195E 03	370	-1.5297848E 04	371	-1.7204645E 04	372	2.6371680E 04
184	3.6310273E 04	185	-2.1931653E 03	186	1.1368695E 04	187	1.6488465E 04	188	5.5264766E 03	189	5.6843359E 03
387	-2.5088941E 04	410	2.7632397E 03	433	7.6489102E 03	318	-4.8511281E 04	341	-1.0965815E 03	364	1.5297848E 04
190	1.0035575E 05	203	2.1931638E 03	204	4.7358148E 04	205	8.6023164E 03	206	5.5264766E 03	207	1.5974898E 04
208	-4.7309492E 03	388	2.7632395E 03	411	-2.5345723E 04	434	-8.6023086E 03	319	1.0965808E 03	342	-4.2987352E 04
365	4.7309414E 03	209	-5.5264688E 03	210	1.0138288E 05	223	-1.1368688E 04	224	8.6023125E 03	225	7.8525039E 03
226	-5.6843438E 03	227	4.7309414E 03	228	1.2596174E 03	389	7.6489258E 03	412	-8.6023125E 03	435	-6.5929141E 03
320	1.5297848E 04	343	-4.7309492E 03	366	-1.0519160E 04	229	-1.5297863E 04	230	1.7204637E 04	231	2.6371676E 04
244	1.6488469E 04	245	-5.5264727E 03	246	5.6843359E 03	247	3.6310281E 04	248	2.1931648E 03	249	1.1368695E 04
390	-4.8511262E 04	413	1.0965806E 03	436	1.5297844E 04	321	-2.5088945E 04	344	-2.7632390E 03	367	7.6489063E 03
250	4.6844613E 04	251	-2.1931646E 03	252	-7.6489219E 03	253	1.0035553E 05	266	-5.5264727E 03	267	1.5974895E 04
268	4.7309453E 03	269	-2.1931648E 03	270	4.7358156E 04	271	-8.6023086E 03	391	-1.0965813E 03	414	-4.2987332E 04
437	-4.7309375E 03	322	-2.7632388E 03	345	-2.5345727E 04	368	8.6023047E 03	272	2.1931658E 03	273	3.5283184E 04
274	9.4618945E 03	275	5.5264688E 03	276	1.0138281E 05	289	-5.6843438E 03	290	-4.7309453E 03	291	1.2596191E 03
292	-1.1368688E 04	293	-8.6023086E 03	294	7.8524961E 03	392	1.5297844E 04	415	4.7309453E 03	438	-1.0519152E 04
323	7.6489258E 03	346	8.6023164E 03	369	-6.5929141E 03	295	-7.6489180E 03	296	-9.4618906E 03	297	7.8525000E 03
298	-1.5297852E 04	299	-1.7204637E 04	300	2.6371672E 04	519	-2.5088926E 04	520	-2.7632395E 03	521	-7.6489180E 03
522	-4.8511242E 04	523	1.0965806E 03	524	-1.5297852E 04	534	3.6310289E 04	535	2.1931633E 03	536	-1.1368676E 04
531	1.6488496E 04	532	-5.5264531E 03	533	-5.6843320E 03	525	-4.3244109E 04	526	-1.0965798E 03	527	5.6843438E 03
528	-8.3154688E 04	529	2.7632383E 03	530	1.1368688E 04	540	1.0035550E 05	542	-2.7632388E 03	543	-2.5345711E 04
544	-8.6023125E 03	545	-1.0965818E 03	546	-4.2987316E 04	547	4.7309453E 03	557	-2.1931655E 03	558	4.7358168E 04
559	8.6023047E 03	554	-5.5264570E 03	555	1.5974926E 04	556	4.7309414E 03	548	1.0965820E 03	549	-4.9024828E 04
550	-1.7204629E 04	551	2.7632388E 03	552	-8.2641083E 04	553	9.4618906E 03	563	5.5264531E 03	564	1.0138269E 05
565	-7.6489141E 03	566	-8.6023086E 03	567	-6.5929102E 03	568	-1.5297840E 04	569	-4.7309375E 03	570	-1.0519145E 04
580	1.1368676E 04	581	8.6023047E 03	582	7.8525078E 03	577	5.6843359E 03	578	4.7309492E 03	579	1.2596208E 03
571	-5.6843281E 03	572	-1.7204633E 04	573	-1.0519145E 04	574	-1.1368672E 04	575	-9.4618906E 03	576	-1.5705055E 04
586	1.5297836E 04	587	1.7204625E 04	588	2.6371664E 04	450	-4.8511234E 04	451	-1.0965808E 03	452	-1.5297848E 04
453	-2.5088926E 04	454	2.7632395E 03	455	-7.6489180E 03	465	1.6488484E 04	466	5.5264570E 03	467	-5.6843359E 03
462	3.6310305E 04	463	-2.1931638E 03	464	-1.1368680E 04	456	-8.3154750E 04	457	-2.7632395E 03	458	1.1368688E 04
459	-4.3244113E 04	460	1.0965806E 03	461	5.6843358E 03	537	4.6844596E 04	560	2.1931658E 03	583	7.6489102E 03
468	1.0035556E 05	473	1.0965815E 03	474	-4.2987305E 04	475	-4.7309492E 03	476	2.7632390E 03	477	-2.5345707E 04
478	8.6023164E 03	488	5.5264609E 03	489	1.5974918E 04	490	4.7309453E 03	485	2.1931641E 03	486	4.7358180E 04
487	-8.6023047E 03	479	-2.7632400E 03	480	-8.2641125E 04	481	-9.4618906E 03	482	-1.0965806E 03	483	-4.9024832E 04
484	1.7204629E 04	538	-2.1931631E 03	561	3.5283160E 04	584	9.4618867E 03	491	-5.5264531E 03	492	1.0138269E 05
486	-1.5297844E 04	497	4.7309414E 03	498	-1.0519152E 04	499	-7.6489180E 03	500	8.6023047E 03	501	-6.5929102E 03
511	5.6843359E 03	512	-4.7309453E 03	513	1.2596189E 03	508	1.1368680E 04	509	-8.6023086E 03	510	7.8525156E 03
502	-1.1368680E 04	503	9.4618945E 03	504	-1.5705051E 04	505	-5.6843320E 03	506	1.7204625E 04	507	-1.0519145E 04
539	7.6489102E 03	562	-9.4618828E 03	585	7.8525039E 03	514	1.5297848E 04	515	-1.7204629E 04	516	2.6371656E 04

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 1-6

6.6719875E 04	1.0040113E 04	1.3835266E 04	2.6693289E 04	-3.3734800E 03	6.9176367E 03
1.0040113E 04	6.6719875E 04	1.3835277E 04	3.3734724E 03	6.6130664E 03	-1.2831266E 04
1.3835266E 04	1.3835277E 04	2.2589902E 04	6.9176367E 03	1.2831270E 04	6.2783447E 02
2.6693289E 04	3.3734724E 03	6.9176367E 03	6.6719875E 04	-1.0040113E 04	1.3835266E 04
-3.3734800E 03	6.6130664E 03	1.2831270E 04	-1.0040113E 04	6.6719875E 04	-1.3835277E 04
6.9176367E 03	-1.2831266E 04	6.2783447E 02	1.3835266E 04	-1.3835277E 04	2.2589902E 04
-1.9986500E 04	1.6867412E 03	-6.4156328E 03	3.3306395E 04	-5.0200547E 03	-1.2831262E 04
-1.6867385E 03	-3.0026613E 04	-1.3835281E 04	-5.0200547E 03	3.3306395E 04	1.2831270E 04
6.4156211E 03	-1.3835270E 04	-5.9611445E 03	1.2831258E 04	-1.2831258E 04	-1.2556753E 03
-3.3306395E 04	5.0200547E 03	-1.2831266E 04	1.9986500E 04	-1.6867400E 03	-6.4156328E 03
5.0200547E 03	-3.3306395E 04	-1.2831270E 04	1.6867397E 03	-3.0026613E 04	1.3835281E 04
1.2831258E 04	1.2831262E 04	-1.2556753E 03	6.4156172E 03	1.3835266E 04	-5.9611445E 03
6.6130586E 03	-3.3734805E 03	1.2831273E 04	-2.6779785E 01	1.0040113E 04	1.3835266E 04
3.3734758E 03	2.6693297E 04	6.9176328E 03	1.0040113E 04	-2.6779785E 01	-6.4156328E 03
-1.2831258E 04	6.9176389E 03	6.2783228E 02	-6.4156328E 03	6.4156289E 03	-5.0193945E 03
-2.6775879E 01	-1.0040113E 04	6.4156250E 03	6.6130625E 03	3.3734797E 03	1.2831270E 04
-1.0040117E 04	-2.6776123E 01	6.4156289E 03	-3.3734778E 03	2.6693293E 04	-6.9176328E 03
-6.4156328E 03	-6.4156289E 03	-5.0193906E 03	-1.2831258E 04	-6.9176328E 03	6.2783545E 02
-1.6679945E 04	-5.0200547E 03	-6.9176289E 03	-3.0026598E 04	1.6867390E 03	-1.3835277E 04
-5.0200547E 03	-1.6679957E 03	-6.9176289E 03	-1.6867402E 03	-1.9986488E 04	6.4156328E 03
-6.9176250E 03	-6.9176289E 03	-5.6472188E 03	-1.3835262E 04	-6.4156172E 03	-5.9611328E 03
-3.0026602E 04	-1.6867402E 03	-1.3835277E 04	-1.6679945E 04	5.0200586E 03	-6.9176289E 03
1.6867393E 03	-1.9986480E 04	-6.4156328E 03	5.0200586E 03	-1.6679953E 04	6.9176289E 03
-1.3835270E 04	6.4156211E 03	-5.9611367E 03	-6.9176289E 03	6.9176250E 03	-5.6472188E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 7-12

-1.9986500E 04	-1.6867385E 03	6.4156211E 03	-3.3306398E 04	5.0200547E 03	1.2831258E 04
1.6867412E 03	-3.0026613E 04	-1.3835270E 04	5.0200547E 03	-3.3306395E 04	1.2831262E 04
-6.4156328E 03	-1.3835281E 04	-5.9611445E 03	-1.2831266E 04	1.2831270E 04	-1.2556753E 03
-3.3306395E 04	-5.0200547E 03	1.2831258E 04	-1.9986500E 04	1.6867397E 03	6.4156172E 03
-5.0200547E 03	-3.3306391E 04	-1.2831258E 04	-1.6867400E 03	-3.0026613E 04	1.3835266E 04
-1.2831262E 04	1.2831270E 04	-1.2556753E 03	-6.4156328E 03	1.3835281E 04	-5.9611445E 03
1.3605306E 05	-3.8040070E 04	-1.3835266E 04	2.1359949E 04	-8.6265352E 03	-6.9176211E 03
-3.8040070E 04	1.3605306E 05	1.3835270E 04	8.6264961E 03	-2.2720230E 04	-1.2831258E 04
-1.3835266E 04	1.3835270E 04	2.2588906E 04	-6.9176250E 03	1.2831266E 04	6.2783521E 02
2.1359957E 04	8.6264961E 03	-6.9176250E 03	1.3605313E 05	3.8040105E 04	-1.3835273E 04
-8.6265352E 03	-2.2720230E 04	1.2831266E 04	3.8040105E 04	1.3605313E 05	-1.3835270E 04
-6.9176211E 03	-1.2831258E 04	6.2783521E 02	-1.3835273E 04	-1.3835270E 04	2.2588902E 04
-1.6679949E 04	5.0200586E 03	6.9176211E 03	-3.0026625E 04	-1.6867400E 03	1.3835266E 04
5.0200586E 03	-1.6679973E 04	-6.9176289E 03	1.6867400E 03	-1.9986516E 04	6.4156211E 03
6.9176367E 03	-6.9176328E 03	-5.6472227E 03	1.3835273E 04	-6.4156328E 03	-5.9611406E 03
-3.0026613E 04	1.6867390E 03	1.3835262E 04	-1.6679949E 04	-5.0200547E 03	6.9176172E 03
-1.6867412E 03	-1.9986504E 04	-6.4156172E 03	-5.0200547E 03	-1.6679973E 04	6.9176250E 03
1.3835270E 04	6.4156328E 03	-5.9611328E 03	6.9176367E 03	6.9176328E 03	-5.6472188E 03
-2.2720156E 04	-8.6264766E 03	-1.2831250E 04	-3.4693387E 04	-3.8040070E 04	-6.4156133E 03
8.6265156E 03	2.1360000E 04	6.9176172E 03	-3.8040070E 04	-3.4693398E 04	-6.4156211E 03
1.2831254E 04	6.9176211E 03	6.2784106E 02	6.4156250E 03	-6.4156250E 03	-5.0193633E 03
-3.4693398E 04	3.8040059E 04	-6.4156172E 03	-2.2720215E 04	8.6264922E 03	-1.2831254E 04
3.8040070E 04	-3.4693398E 04	6.4156250E 03	-8.6265391E 03	2.1359953E 04	-6.9176250E 03
6.4156289E 03	-6.4156211E 03	-5.0193711E 03	1.2831262E 04	-6.9176289E 03	6.2784033E 02

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 13-18

6.6130586E 03	3.3734758E 03	-1.2831258E 04	-2.6775879E 01	-1.0040117E 04	-6.4156328E 03
-3.3734805E 03	2.6693297E 04	6.9176289E 03	-1.0040113E 04	-2.6776123E 01	-6.4156289E 03
1.2831273E 04	6.9176328E 03	6.2783228E 02	6.4156250E 03	6.4156289E 03	-5.0193906E 03
-2.6779785E 01	1.0040113E 04	-6.4156328E 03	6.6130625E 03	-3.3734778E 03	-1.2831258E 04
1.0040113E 04	-2.6778564E 01	6.4156289E 03	3.3734797E 03	2.6693293E 04	-6.9176328E 03
6.4156250E 03	-6.4156328E 03	-5.0193945E 03	1.2831270E 04	-6.9176328E 03	6.2783545E 02
-1.6679969E 04	5.0200508E 03	6.9176367E 03	3.0026613E 04	-1.6867412E 03	1.3835270E 04
5.0200586E 03	-1.6679973E 04	-6.9176328E 03	1.6867390E 03	-1.9986504E 04	6.4156328E 03
6.9176211E 03	-6.9176289E 03	-5.6472227E 03	1.3835262E 03	-6.4156172E 03	-5.9611328E 03
-3.0026625E 04	1.6867400E 03	1.3835273E 04	-1.6679969E 04	-5.0200547E 03	6.9176367E 03
-1.6867400E 03	-1.9986516E 04	-6.4156328E 03	-5.0200547E 03	-1.6679973E 04	6.9176328E 03
1.3835266E 04	6.4156211E 03	-5.9611406E 03	6.9176172E 03	6.9176250E 03	-5.6472188E 03
6.6719875E 04	-1.0040117E 04	-1.3835277E 04	2.6693289E 04	3.3734832E 03	-6.9176328E 03
-1.0040117E 04	6.6719875E 04	1.3835273E 04	-3.3734753E 03	6.6130742E 03	-1.2831266E 04
-1.3835277E 04	1.3835273E 04	-3.3734753E 03	6.6130742E 03	1.2831266E 04	6.2783984E 02
2.6693289E 04	3.3734753E 03	-6.9176328E 03	6.6719813E 04	1.0040113E 04	-1.3835273E 04
3.3734832E 03	6.6130742E 03	1.2831266E 04	1.0040113E 04	6.6719813E 04	-1.3835273E 04
-6.9176328E 03	-1.2831266E 04	6.2783984E 02	-1.3835273E 04	-1.3835273E 04	2.2588898E 04
-1.9986488E 04	-1.6867383E 03	6.4156289E 03	-3.3306402E 04	5.0200508E 03	1.2831262E 04
1.6867407E 03	-3.0026605E 04	-1.3835273E 04	5.0200508E 03	-3.3306402E 04	-1.2556799E 03
-6.4156133E 03	-1.3835266E 04	-5.9611328E 03	-1.2831250E 04	-1.2831254E 04	1.2831262E 04
-3.3306398E 04	-5.0200547E 03	1.2831266E 04	-1.9986500E 04	1.6867407E 03	6.4156289E 03
-5.0200547E 03	-3.3306406E 04	-1.2831258E 04	-1.6867388E 03	-3.0026613E 04	1.3835266E 04
-1.2831258E 04	1.2831258E 04	-1.2556760E 03	-6.4156172E 03	1.3835262E 04	-5.9611328E 03

ELEMENT STIFFNESS MATRIX FOR MEMBER 3

COLUMNS 19-24

-1.6679945E 04	-5.0200547E 03	-6.9176250E 03	-3.0026602E 04	1.6867393E 03	-1.3835270E 04
-5.0200547E 03	-1.6679957E 04	-6.9176289E 03	-1.6867402E 03	-1.9986480E 04	6.4156211E 03
-6.9176289E 03	-6.9176289E 03	-5.6472188E 03	-1.3835277E 04	-6.4156328E 03	-5.9611367E 03
-3.0026598E 04	-1.6867402E 03	-1.3835262E 04	-1.6679957E 04	5.0200508E 03	-6.9176289E 03
1.6867390E 03	-1.9986488E 04	-6.4156172E 03	5.0200586E 03	-1.6679953E 04	6.9176250E 03
-1.3835277E 04	6.4156328E 03	-5.9611328E 03	-6.9176289E 03	6.9176289E 03	-5.6472188E 03
-2.2720156E 04	8.6265117E 03	1.2831254E 04	-3.4693398E 04	3.8040070E 04	6.4156289E 03
-8.6264766E 03	2.1360008E 04	6.9176211E 03	3.8040059E 04	-3.4693398E 04	-6.4156211E 03
-1.2831250E 04	6.9176172E 03	6.2784106E 02	-6.4156172E 03	6.4156250E 03	-5.0193711E 03
-3.4693387E 04	-3.8040055E 04	6.4156250E 03	-2.2720156E 04	-8.6265391E 03	1.2831262E 04
-3.8040055E 04	-3.4693398E 04	6.4156289E 03	8.6264883E 03	2.1359961E 04	-6.9176289E 03
-6.4156133E 03	-6.4156211E 03	-5.0193533E 03	-1.2831254E 04	-6.9176250E 03	6.2784033E 02
-1.9986488E 04	1.6867407E 03	-6.4156133E 03	-3.3306398E 04	-5.0200547E 03	1.2831258E 04
1.6867383E 03	-3.0026605E 04	-1.3835266E 04	-5.0200547E 03	-3.3306406E 04	1.2831258E 04
6.4156289E 03	-1.3835273E 04	-5.9611328E 03	1.2831266E 04	-1.2831258E 04	-1.2556760E 03
-3.3306402E 04	5.0200508E 03	-1.2831250E 04	-1.9986500E 04	-1.6867388E 03	-6.4156172E 03
5.0200508E 03	-3.3306402E 04	-1.2831254E 04	1.6867407E 03	-3.0026613E 04	1.3835262E 04
1.2831262E 04	1.2831262E 04	-1.2556799E 03	6.4156289E 03	1.3835266E 04	-5.9611328E 03
1.3605281E 05	3.8040020E 04	1.3835254E 04	2.1360000E 04	8.6265117E 03	6.9176133E 03
3.8040020E 04	1.3605288E 05	1.3835258E 04	-8.6264727E 03	-2.2720172E 04	-1.2831250E 04
1.3835254E 04	1.3835258E 04	2.2588887E 04	6.9176133E 03	1.2831254E 04	6.2783594E 02
2.1360008E 04	-8.6264727E 03	6.9176133E 03	1.3605306E 05	-3.8040074E 04	1.3835266E 04
8.6265117E 03	-2.2720172E 04	1.2831254E 04	-3.8040074E 04	1.3605306E 05	-1.3835262E 04
6.9176133E 03	-1.2831250E 04	6.2783594E 02	1.3835266E 04	-1.3835262E 04	2.2588895E 04

ISTAK

ELEMENT STIFFNESS MATRIX ENTRIES TO BE STACKED, WITH THEIR STACKING INDICES, FOR MEMBER 3

324	6.6719875E 04	347	1.0040113E 04	348	6.6719875E 04	370	1.3835266E 04	371	1.3835277E 04	372	2.2588902E 04
325	2.6693289E 04	394	3.3734724E 03	395	6.9176367E 03	396	6.6719875E 04	416	-3.3734800E 03	417	6.6130664E 03
418	1.2831270E 04	419	-1.0040113E 04	420	6.6719875E 04	439	6.6719875E 03	440	-1.2831266E 04	441	6.2783447E 02
442	1.3835266E 04	443	-1.3835277E 04	444	2.2588902E 04	669	-1.9986500E 04	670	1.6867412E 03	671	6.4156328E 03
672	-3.3306395E 04	673	-5.0200547E 03	674	1.2831262E 04	684	-1.2831262E 04	692	-1.6867385E 03	693	3.0026613E 04
694	-1.3835281E 04	695	-5.0200547E 03	696	3.3306391E 04	697	1.2831270E 04	707	-3.8040070E 04	708	1.3605306E 05
715	6.4156211E 03	716	-1.3835270E 04	717	-5.9611445E 03	718	1.2831258E 04	719	-1.2831258E 04	720	-1.2556753E 03
730	-1.3835266E 04	731	1.3835270E 04	732	2.2588906E 04	600	3.3306398E 04	601	5.0200547E 03	602	-1.2831266E 04
603	-1.9986500E 04	604	1.6867400E 03	605	-6.4156328E 03	681	2.1359957E 04	704	8.6264961E 03	727	-6.9176250E 03
612	1.3605313E 05	623	5.0200547E 03	624	3.3306395E 04	625	-1.2831270E 04	626	1.6867397E 03	627	3.0026613E 04
628	1.3835281E 04	682	-8.6265352E 03	705	-2.2720320E 04	728	1.2831266E 04	635	3.8040105E 04	636	1.3605313E 05
646	1.2831258E 04	647	1.2831262E 04	648	-1.2556753E 03	649	6.4156172E 03	650	1.3835266E 04	651	-5.9611445E 03
683	-6.9176211E 03	706	-1.2831258E 04	729	6.2783521E 02	658	-1.3835273E 04	659	-1.3835270E 04	660	2.2588902E 04
462	6.6130586E 03	463	3.3734805E 03	464	1.2831273E 04	465	-2.6779785E 01	466	1.0040113E 04	467	6.4156250E 03
675	-1.6679969E 04	698	5.0200586E 03	721	6.9176211E 03	606	-3.0026625E 04	629	-1.6867400E 03	652	1.3835266E 04
468	6.6719875E 04	485	3.3734758E 03	486	2.6693297E 04	487	6.9176328E 03	488	1.0040113E 04	489	-2.6778564E 01
490	-6.4156328E 03	676	5.020058E 03	699	-1.6679973E 04	722	-6.9176289E 03	607	1.6867400E 03	630	-1.9986516E 04
653	6.4156211E 03	491	-1.0040117E 04	492	6.6719875E 04	508	-1.2831258E 04	509	6.9176289E 03	510	6.2783228E 02
511	-6.4156328E 03	512	6.4156289E 03	513	-5.9193945E 03	677	6.9176367E 03	700	-6.9176328E 03	723	-5.6472227E 03
608	1.3835273E 04	631	-6.4156328E 03	654	-5.9611406E 03	514	-1.3835277E 04	515	1.3835273E 04	516	2.2588908E 04
531	-2.6775879E 01	532	-1.0040113E 04	533	6.4156250E 03	534	6.6130625E 03	535	3.3734797E 03	536	1.2831270E 04
678	-3.0026613E 04	701	1.6867390E 03	724	1.3835262E 04	609	-1.6679969E 04	632	-5.0200547E 03	655	6.9176172E 03
537	2.6693289E 04	538	3.3734753E 03	539	-6.9176328E 03	540	6.6719813E 04	554	-1.0040117E 04	555	-2.6776123E 01
556	6.4156289E 03	557	-3.3734778E 03	558	2.6693293E 04	559	-6.9176328E 03	679	-1.6867412E 03	702	-1.9986504E 04
725	-6.4156172E 03	610	-5.0200547E 03	633	-1.6679973E 04	656	6.9176250E 03	560	3.3734832E 03	561	6.6130742E 03
562	1.2831266E 04	563	1.0040113E 04	564	6.6719813E 04	577	-6.4156328E 03	578	-6.4156289E 03	579	-5.0193906E 03
580	-1.2831258E 04	581	-6.9176328E 03	582	6.2783525E 02	680	1.3835270E 04	703	6.4156328E 03	726	-5.9611328E 03
611	6.9176367E 03	634	6.9176328E 03	657	-5.6472188E 03	583	-6.9176328E 03	584	-1.2831266E 04	585	6.2783984E 02
586	-1.3835273E 04	587	-1.3835273E 04	588	2.2588908E 04	812	-1.3835277E 04	823	-8.6264766E 03	824	-1.2831250E 04
810	-3.0026598E 04	811	1.6867390E 03	812	-1.3835277E 04	822	-2.2720156E 04	823	-8.6264766E 03	824	-1.2831250E 04
819	3.4693387E 04	820	-3.8040070E 04	821	-6.4156133E 03	813	-1.9986488E 04	814	-1.6867383E 03	815	6.4156289E 03
816	-3.3306402E 04	817	5.0200508E 03	818	1.2831262E 04	828	1.3605281E 05	830	-5.0200547E 03	831	-1.6679957E 04
832	-6.9176289E 03	833	-1.6867402E 03	834	-3.8040070E 04	835	6.4156328E 03	845	8.6265156E 03	846	2.1360000E 04
847	6.9176172E 03	842	-3.8040070E 04	843	-3.4693398E 04	844	-6.4156211E 03	836	1.6867407E 03	837	-3.0026605E 04
838	-1.3835273E 04	839	5.0200508E 03	840	-3.3306402E 04	841	1.2831262E 04	851	3.8040020E 04	852	1.3605288E 05
853	-6.9176250E 03	854	-6.9176289E 03	855	-5.6472188E 03	856	-1.3835262E 04	857	-6.4156172E 03	858	-5.9611328E 03
868	1.2831254E 04	869	6.9176211E 03	870	6.2784106E 02	865	6.4156250E 03	866	6.4156289E 03	867	-5.0193633E 03
859	-6.4156133E 03	860	-1.3835266E 04	861	-5.9611328E 03	862	-1.2831250E 04	863	-1.2831254E 04	864	-1.2556799E 03
874	1.3835254E 04	875	1.3835258E 04	876	2.2588887E 04	738	-3.0026602E 04	739	-1.6867402E 03	740	-1.3835277E 04
741	-1.6679957E 04	742	5.0200586E 03	743	-6.9176289E 03	753	-3.4693398E 04	754	3.8040059E 04	755	-6.4156172E 03
750	-2.2720215E 04	751	8.6264922E 03	752	-1.2831254E 04	744	-3.3306398E 04	745	-5.0200547E 03	746	1.2831266E 04
747	-1.9986500E 04	748	1.6867407E 03	749	6.4156289E 03	825	2.1360000E 04	848	-8.6264727E 03	871	6.9176133E 03
756	1.3605306E 05	761	1.6867393E 03	762	-1.9986480E 04	763	-6.4156328E 03	764	5.0200508E 03	765	-1.5679953E 04
766	6.9176289E 03	776	3.8040070E 04	777	-3.4693398E 04	778	6.4156250E 03	773	-8.6265391E 03	774	2.1359953E 04
775	-6.9176250E 03	767	-5.0200547E 03	768	-3.3306406E 04	769	-1.2831258E 04	770	-1.6867388E 04	771	-3.0026613E 04
772	1.3835266E 04	826	8.6265117E 03	849	-2.2720172E 04	872	1.2831254E 04	779	-3.8040074E 04	780	1.3605306E 05
784	-1.3835270E 04	785	6.4156211E 03	786	-5.9193711E 03	787	-6.9176289E 03	788	6.9176250E 03	789	-5.6472188E 03
799	6.4156289E 03	800	-6.4156211E 03	801	-5.0193711E 03	796	1.2831262E 04	797	-6.9176289E 03	798	6.2784033E 02
790	-1.2831258E 04	791	1.2831258E 04	792	-1.2556760E 03	793	-6.4156172E 03	794	1.3835262E 04	795	-5.9611328E 03
827	6.9176133E 03	850	-1.2831250E 04	873	6.2783594E 02	802	1.3835266E 04	803	-1.3835262E 04	804	2.2588908E 04

FROM PUTLAB,

NAME = MASS MAT, I/O UNIT = 20, FILE = 2, ROWS = 1, COLUMNS = 48

FROM PUTLAB,

NAME = C-MATRIX, I/O UNIT = 20, FILE = 3, ROWS = 48, COLUMNS = 48

FSAKG

NSTAK

NSTAK

FSAKG/RESTOR

PROCES

FROM PUTLAB.
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM GETDIM.
NAME = A G-56, I/O UNIT = 12, FILE = 1, ROWS = 3, COLUMNS = 1

FROM GETDIM.
NAME = C-MATRIX, I/O UNIT = 20, FILE = 3, ROWS = 48, COLUMNS = 48

FROM PUTLAB.
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM GETDIM.
NAME = GEOMETRY, I/O UNIT = 10, FILE = 1, ROWS = 13, COLUMNS = 5

FROM GETDIM.
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

PROCES

NODE	PRIMARY STRUCTURE GLOBAL GEOMETRY			DEGREES OF FREEDOM					
	X	Y	Z	DX	DY	DZ	RX	RY	RZ
1	0.0	0.0	0.0	1	2	0	3	4	5
2	0.0	5.000000E 00	0.0	6	0	0	7	8	9
3	5.000000E 00	0.0	0.0	10	11	12	13	14	15
4	5.000000E 00	5.000000E 00	0.0	16	0	17	18	19	20
5	1.000000E 01	0.0	0.0	0	21	0	22	23	24
6	1.000000E 01	5.000000E 00	0.0	0	0	0	25	26	27
7	-5.000000E-01	-5.000000E-01	-5.000000E-01	0	0	0	0	0	0
8	0.0	0.0	-5.000000E-01	0	0	0	0	0	0
9	5.000000E 00	0.0	-5.000000E-01	0	0	0	0	0	0
10	1.000000E 01	0.0	-5.000000E-01	0	0	0	0	0	0
11	0.0	5.000000E 00	-5.000000E-01	0	0	0	0	0	0
12	5.000000E 00	5.000000E 00	-5.000000E-01	0	0	0	0	0	0
13	1.000000E 01	5.000000E 00	-5.000000E-01	0	0	0	0	0	0

FROM GETDIM,

NAME = MEMBERS , I/O UNIT = 17, FILE = 1, ROWS = 6, COLUMNS = 100

FROM PUTLAB,

NAME = EL STIFF, I/O UNIT = 9, FILE = 1, ROWS = 8, COLUMNS = 24

FROM PUTLAB,

NAME = EL MASS , I/O UNIT = 8, FILE = 1, ROWS = 8, COLUMNS = 24

INPUT

INPUT/SPLITS

PRINT3

**** MEMBER NUMBER = 1 *****

1 2 3 4

MATRIX (AKG)		1)		8 ROWS.		8 COLUMNS, FROM PROGRAM ELS	
1	2	3	4	5	6	7	8
1	5.133293D 06	1.785714D 06	3.612119D 05	-3.210215D 06	-1.373635D 05	-2.284290D 06	0.0
2	1.785714D 06	5.133293D 06	-1.373635D 05	1.373635D 05	3.612119D 05	-1.785715D 06	0.0
3	3.612119D 05	-1.373635D 05	5.133293D 06	-2.284290D 06	1.785715D 06	-3.210215D 06	0.0
4	-3.210215D 06	1.373635D 05	-2.284290D 06	5.133293D 06	-1.785714D 06	3.612119D 05	0.0
5	-1.373635D 05	3.612119D 05	1.785715D 06	-1.785715D 06	5.133293D 06	1.373635D 05	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	-2.284290D 06	-1.785715D 06	-3.210215D 06	3.612119D 05	1.373635D 05	5.133293D 06	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (MASS)		1)		20 ROWS.		20 COLUMNS, FROM PROGRAM ELS	
1	2	3	4	5	6	7	8
1	2.992363D-04	0.0	0.0	-4.284335D-04	0.0	0.0	0.0
2	0.0	2.992363D-04	0.0	0.0	0.0	0.0	0.0
3	-4.284335D-04	0.0	9.057065D-04	-4.284335D-04	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (MASS)		1)		20 ROWS.		20 COLUMNS, FROM PROGRAM ELS	
1	2	3	4	5	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

20	1	2	3	4	5	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

17	18	19	20
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	-1.831501D 05	4.825506D 05	-3.706610D 05
4	1.831501D 05	-3.706610D 05	4.825506D 05
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	5.494495D 04	1.497534D 05	8.721421D 04
8	3.663000D 05	-8.721421D 04	4.331995D 05
9	0.0	0.0	0.0
10	0.0	0.0	0.0
11	0.0	0.0	0.0
12	-2.197800D 05	3.663000D 05	-5.494495D 04
13	-3.663000D 05	4.331995D 05	-8.721421D 04
14	-5.494495D 04	8.721421D 04	1.497534D 05
15	0.0	0.0	0.0
16	0.0	0.0	0.0
17	4.395601D 05	-6.043951D 05	6.043951D 05
18	-6.043951D 05	1.681747D 06	-8.198144D 05
19	6.043951D 05	-8.198144D 05	1.681747D 06
20	0.0	0.0	0.0

MATRIX (MASS 1) 20 ROWS, 20 COLUMNS, FROM PROGRAM EL16

1	2	3	4	5	6	7	8
1	4.043736D-05	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	4.043736D-05	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

5	1	2	3	4	5	6	7	8
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	1	2	3	4	5	6	7	8
7	0.0	0.0	0.0	0.0	0.0	4.043736D-05	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	9	10	11	12	13	14	15	16
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	17	18	19	20				
2	0.0	0.0	0.0	0.0				
3	0.0	0.0	0.0	0.0				
4	0.0	0.0	0.0	0.0				
5	0.0	0.0	0.0	0.0				
6	0.0	0.0	0.0	0.0				
7	0.0	0.0	0.0	0.0				
8	0.0	0.0	0.0	0.0				
9	0.0	0.0	0.0	0.0				
10	0.0	0.0	0.0	0.0				
11	0.0	0.0	0.0	0.0				

PRINT3

12	17	18	19	20
0.0	0.0	0.0	0.0	0.0

13	17	18	19	20
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0

**** MEMBER NUMBER = 2 *****

MATRIX (AKG 2) 6 ROWS, 6 COLUMNS, FROM PROGRAM ELS

	1	2	3	4	5	6
1	5.133293D 06	1.785714D 06	0.0	3.612119D 05	0.0	-1.373635D 05
2	1.785714D 06	5.133293D 06	0.0	-1.373635D 05	0.0	3.612119D 05
3	0.0	0.0	0.0	0.0	0.0	0.0
4	3.612119D 05	-1.373635D 05	0.0	5.133293D 06	0.0	1.785715D 06
5	0.0	0.0	0.0	0.0	0.0	0.0
6	-1.373635D 05	3.612119D 05	0.0	1.785715D 06	0.0	5.133293D 06

MATRIX (MASS 2) 18 ROWS, 18 COLUMNS, FROM PROGRAM ELS

	1	2	3	4	5	6	7	8
1	2.992363D-04	0.0	0.0	-4.284335D-04	0.0	0.0	0.0	0.0
2	0.0	2.992363D-04	0.0	0.0	-4.284335D-04	0.0	0.0	0.0
3	0.0	0.0	2.992363D-04	0.0	0.0	0.0	0.0	0.0
4	-4.284335D-04	0.0	0.0	9.057065D-04	0.0	0.0	0.0	0.0
5	0.0	-4.284335D-04	0.0	0.0	9.057065D-04	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	9	10	11	12	13	14	15	16
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

6	9	10	11	12	13	14	15	16
7	-4.284335D-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	9.057065D-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	9.057065D-04	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	2.992363D-04	0.0	-4.284335D-04	0.0	0.0
13	0.0	0.0	0.0	0.0	9.057065D-04	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	9.057065D-04	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

17	18
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	0.0
14	0.0
15	0.0
16	0.0
17	9.057065D-04
18	0.0

MATRIX (AKG. 2) 18 ROWS. 18 COLUMNS. FROM PROGRAM EL16

1	2	3	4	5	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	4.395601D 05	6.043951D 05	-6.043951D 05	0.0	0.0	-2.197800D 05
4	0.0	6.043951D 05	1.681747D 06	-8.198144D 05	0.0	0.0	-3.663000D 05
5	0.0	-6.043951D 05	-8.198144D 05	1.681747D 06	0.0	0.0	5.494495D 04
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	-2.197800D 05	-3.663000D 05	5.494495D 04	0.0	0.0	4.395601D 05
9	0.0	3.663000D 05	4.331995D 05	-8.721421D 04	0.0	0.0	-6.043951D 05
10	0.0	5.494495D 04	8.721421D 04	1.497534D 05	0.0	0.0	-6.043951D 05
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	-5.494495D 04	1.497534D 05	8.721421D 04	0.0	0.0	-1.831501D 05
14	0.0	-3.663000D 05	-8.721421D 04	4.331995D 05	0.0	0.0	-1.831501D 05

PRINT3

15	1	2	3	4	5	6	7	8
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	1.831501D 05	4.825506D 05	-3.706610D 05	0.0	0.0	5.494495D 04
17	0.0	0.0	-1.831501D 05	-3.706610D 05	4.825506D 05	0.0	0.0	-3.663000D 05
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	3.663000D 05	5.494495D 04	0.0	0.0	-5.494495D 04	-3.663000D 05	0.0	1.831501D 05
4	4.331995D 05	8.721421D 04	0.0	0.0	1.497534D 05	-8.721421D 04	0.0	4.825506D 05
5	-8.721421D 04	1.497534D 05	0.0	0.0	8.721421D 04	4.331995D 05	0.0	-3.706610D 05
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	-6.043951D 05	-6.043951D 05	0.0	0.0	-1.831501D 05	-1.831501D 05	0.0	5.494495D 04
9	1.681747D 06	8.198144D 05	0.0	0.0	4.825506D 05	3.706610D 05	0.0	1.497534D 05
10	8.198144D 05	1.681747D 06	0.0	0.0	3.706610D 05	4.825506D 05	0.0	-8.721421D 04
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	4.825506D 05	3.706610D 05	0.0	0.0	1.681747D 06	8.198144D 05	0.0	4.331995D 05
14	3.706610D 05	4.825506D 05	0.0	0.0	8.198144D 05	1.681747D 06	0.0	8.721421D 04
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	1.497534D 05	-8.721421D 04	0.0	0.0	4.331995D 05	8.721421D 04	0.0	1.681747D 06
17	8.721421D 04	1.497534D 05	0.0	0.0	-8.721421D 04	1.497534D 05	0.0	-8.198144D 05
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

17 18

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	-1.831501D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	-3.706610D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4.825506D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	-3.663000D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	8.721421D 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	4.331995D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	-8.721421D 04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	1.497534D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	-8.198144D 05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	1.681747D 06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (MASS 2) 18 ROWS, 18 COLUMNS, FROM PROGRAM EL16

1	2	3	4	5	6	7	8
4.043736D-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	4.043736D-05	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	4.043736D-05	0.0	0.0	0.0	0.0	0.0

PRINT3

4	0.0	1	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
5	0.0	1	0.0	2	0.0	3	0.0	4	0.0	5	0.0	6	0.0	7	0.0	8	0.0
6	0.0																
7	0.0																
8	0.0																
9	0.0																
10	0.0																
11	0.0																
12	0.0																
13	0.0																
14	0.0																
15	0.0																
16	0.0																
17	0.0																
18	0.0																
1	0.0	9	0.0	10	0.0	11	0.0	12	0.0	13	0.0	14	0.0	15	0.0	16	0.0
2	0.0																
3	0.0																
4	0.0																
5	0.0																
6	0.0																
7	0.0																
8	0.0																
9	0.0																
10	0.0																
11	0.0																
12	0.0																
13	0.0																
14	0.0																
15	0.0																
16	0.0																
17	0.0																
18	0.0																
1	0.0	17	0.0	18	0.0												
2	0.0																
3	0.0																
4	0.0																
5	0.0																
6	0.0																
7	0.0																
8	0.0																
9	0.0																
10	0.0																
11	0.0																
12	0.0																
13	0.0																
14	0.0																

PRINT3

```

15 0.0 17 18
    0.0 0.0
16 0.0 17 18
    0.0 0.0
17 0.0 17 18
    0.0 0.0
18 0.0 17 18
    0.0 0.0

```

**** MEMBER NUMBER = 3 *****

MATRIX (AKG) 3) 11 ROWS, 11 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	2.000000 06	7.727154D-13	-8.045253D-10	-1.000000 06	1.931788D-12	-2.000000 06	-7.727154D-13	0.0
2	7.727154D-13	9.600002D 02	4.800001D 02	0.0	2.400000 03	-7.727154D-13	-9.600002D 02	0.0
3	-8.045253D-10	4.800001D 02	4.086154D 03	4.088951D-10	1.200000 03	8.045253D-10	-4.800001D 02	1.931788D-12
4	-1.000000 06	0.0	4.088951D-10	5.080000 05	0.0	1.000000 06	0.0	2.400000 03
5	1.931788D-12	2.400000 06	1.200000 03	0.0	8.000001D 03	-1.931788D-12	-2.400000 06	0.0
6	-2.000000 06	-7.727154D-13	8.045253D-10	1.000000 06	-1.931788D-12	2.000000 06	7.727154D-13	0.0
7	-7.727154D-13	-9.600002D 02	-4.800001D 02	0.0	-2.400000 03	7.727154D-13	9.600002D 02	0.0
8	0.0	0.0	1.931788D-12	2.400000 03	0.0	0.0	0.0	9.600002D 02
9	8.045253D-10	-4.800001D 02	-4.086154D 03	-3.992362D-10	-1.200000 03	-8.045253D-10	4.800001D 02	1.931788D-12
10	1.000000 06	0.0	-3.992362D-10	-4.960000 05	0.0	-1.000000 06	0.0	2.400000 03
11	1.931788D-12	2.400000 03	1.200000 03	0.0	4.000001D 03	-1.931788D-12	-2.400000 03	0.0

MATRIX (MASS) 3) 11 ROWS, 11 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	8.045253D-10	1.000000 06	1.931788D-12	2.400000 03	0.0	0.0	0.0	0.0
2	-4.800001D 02	0.0	2.400000 03	1.200000 03	0.0	0.0	0.0	0.0
3	-4.086154D 03	-3.992362D-10	1.200000 03	0.0	0.0	0.0	0.0	0.0
4	-3.992362D-10	-4.960000 05	0.0	4.000001D 03	-1.931788D-12	-2.400000 03	0.0	0.0
5	-1.200000 03	0.0	0.0	4.000001D 03	-1.931788D-12	-2.400000 03	0.0	0.0
6	-8.045253D-10	-1.000000 06	-1.931788D-12	-2.400000 03	0.0	0.0	0.0	0.0
7	4.800001D 02	0.0	2.400000 03	1.200000 03	0.0	0.0	0.0	0.0
8	1.931788D-12	2.400000 03	1.200000 03	0.0	0.0	0.0	0.0	0.0
9	4.086154D 03	4.088951D-10	-1.200000 03	0.0	0.0	0.0	0.0	0.0
10	4.088951D-10	5.080000 05	0.0	0.0	0.0	0.0	0.0	0.0
11	-1.200000 03	0.0	8.000001D 03	0.0	0.0	0.0	0.0	0.0

MATRIX (MASS) 3) 11 ROWS, 11 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	6.469974D-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	6.469974D-05	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	6.469974D-05	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	6.469974D-05	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.469974D-05
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

```

1 0.0 10 0.0 11 0.0
2 0.0 10 0.0 11 0.0
3 0.0 10 0.0 11 0.0
4 0.0 10 0.0 11 0.0
5 0.0 10 0.0 11 0.0
6 0.0 10 0.0 11 0.0
7 0.0 10 0.0 11 0.0
8 0.0 10 0.0 11 0.0
9 0.0 10 0.0 11 0.0
10 0.0 10 0.0 11 0.0
11 0.0 10 0.0 11 0.0

```

**** MEMBER NUMBER = 4 *****

MATRIX (AKG 4) 10 ROWS, 10 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	2.000000 06	0.0	0.0	0.0	-1.000000 06	0.0	0.0	0.0
2	0.0	9.600002D 02	0.0	4.800001D 02	0.0	2.400000D 03	-9.600002D 02	-4.800001D 02
3	0.0	0.0	9.600002D 02	0.0	-2.400000D 03	0.0	0.0	0.0
4	0.0	4.800001D 02	0.0	4.806154D 03	0.0	1.200000D 03	-4.800001D 02	-4.086154D 03
5	-1.000000D 06	0.0	-2.400000D 03	0.0	5.080000D 05	0.0	0.0	0.0
6	0.0	2.400000D 03	0.0	1.200000D 03	0.0	8.000001D 03	-2.400000D 03	-1.200000D 03
7	0.0	9.600002D 02	0.0	-4.800001D 02	0.0	-2.400000D 03	9.600002D 02	4.800001D 02
8	0.0	-4.800001D 02	0.0	-4.086154D 03	0.0	-1.200000D 03	4.800001D 02	4.086154D 03
9	1.000000D 06	0.0	-2.400000D 03	0.0	-4.960000D 05	0.0	0.0	0.0
10	0.0	2.400000D 03	0.0	1.200000D 03	0.0	4.000001D 03	-2.400000D 03	-1.200000D 03

```

1 1.000000 06
2 0.0 2.400000 03
3 -2.400000 03
4 0.0 1.200000 03
5 -4.960000 05
6 0.0 4.000001 03
7 0.0 -2.400000 03
8 0.0 -1.200000 03
9 5.080000 05
10 0.0 8.000001 03

```

MATRIX (MASS 4) 10 ROWS, 10 COLUMNS, FROM PROGRAM EL2

	1	2	3	4	5	6	7	8
1	6.469974D-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	6.469974D-05	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	6.469974D-05	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	6.469974D-05	0.0

PRINT3

8	0.0	1	2	3	4	5	6	7	8
			0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	1	2	3	4	5	6	7	8
			0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	9	10						
2	0.0								
3	0.0								
4	0.0								
5	0.0								
6	0.0								
7	0.0								
8	0.0								
9	0.0								
10	0.0								

**** MEMBER NUMBER = 5 *****

MATRIX (AKG 5) 9 ROWS, 9 COLUMNS, FROM PROGRAM EL2

1	2	3	4	5	6	7	8
2.000000 06	0.0	-1.000000 06	0.0	-2.000000 06	0.0	0.0	1.000000 06
0.0	4.086154D 03	0.0	1.200000 03	0.0	0.0	-4.086154D 03	0.0
-1.000000 06	0.0	5.080000 05	0.0	1.000000 06	2.400000 03	0.0	-4.960000 05
0.0	1.200000 03	0.0	8.000000 03	0.0	0.0	-1.200000 03	0.0
-2.000000 06	0.0	1.000000 06	0.0	2.000000 06	0.0	0.0	-1.000000 06
0.0	0.0	2.400000 03	0.0	0.0	9.600000 02	0.0	2.400000 03
-4.086154D 03	0.0	0.0	-1.200000 03	0.0	0.0	4.086154D 03	0.0
1.000000 06	0.0	-4.960000 05	0.0	-1.000000 06	2.400000 03	0.0	5.080000 05
0.0	1.200000 03	0.0	4.000000 03	0.0	0.0	-1.200000 03	0.0

1	2	3	4	5	6	7	8	9
0.0	1.200000 03	0.0	4.000000 03	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

MATRIX (MASS 5) 9 ROWS, 9 COLUMNS, FROM PROGRAM EL2

1	2	3	4	5	6	7	8
6.469974D-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PRINT3

1	2	3	4	5	6	7	8
6	0.0	0.0	0.0	0.0	6.469974D-05	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1	2	3	4	5	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**** MEMBER NUMBER = 6 *****

MATRIX (AKG	6)	8 ROWS,	8 COLUMNS, FROM PROGRAM EL2
1	2.000000D 06	0.0	0.0
2	9.600000D 02	0.0	0.0
3	0.0	4.086154D 03	0.0
4	-1.000000D 06	-2.400000D 03	0.0
5	0.0	0.0	5.080000D 05
6	0.0	1.200000D 03	0.0
7	1.000000D 06	-4.086154D 03	0.0
8	0.0	1.200000D 03	0.0

MATRIX (MASS	6)	8 ROWS,	8 COLUMNS, FROM PROGRAM EL2
1	2.000000D 06	0.0	0.0
2	9.600000D 02	0.0	0.0
3	0.0	4.086154D 03	0.0
4	-1.000000D 06	-2.400000D 03	0.0
5	0.0	0.0	5.080000D 05
6	0.0	1.200000D 03	0.0
7	1.000000D 06	-4.086154D 03	0.0
8	0.0	1.200000D 03	0.0

MATRIX (AKG	6)	8 ROWS,	8 COLUMNS, FROM PROGRAM EL2
1	2.000000D 06	0.0	0.0
2	9.600000D 02	0.0	0.0
3	0.0	4.086154D 03	0.0
4	-1.000000D 06	-2.400000D 03	0.0
5	0.0	0.0	5.080000D 05
6	0.0	1.200000D 03	0.0
7	1.000000D 06	-4.086154D 03	0.0
8	0.0	1.200000D 03	0.0

MATRIX (MASS	6)	8 ROWS,	8 COLUMNS, FROM PROGRAM EL2
1	2.000000D 06	0.0	0.0
2	9.600000D 02	0.0	0.0
3	0.0	4.086154D 03	0.0
4	-1.000000D 06	-2.400000D 03	0.0
5	0.0	0.0	5.080000D 05
6	0.0	1.200000D 03	0.0
7	1.000000D 06	-4.086154D 03	0.0
8	0.0	1.200000D 03	0.0

INPUT

ASTACK

SBMAIN/QFACT

MATRIX K11 HAS 8 MEMBERS AND A BAND WIDTH OF 20.

FROM PUTLAB.
NAME = TOTSTIFF, I/O UNIT = 4, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM.
NAME = EL STIFF, I/O UNIT = 9, FILE = 1, ROWS = 8, COLUMNS = 24

FROM GETDIM.
NAME = TOTSTIFF, I/O UNIT = 4, FILE = 2, ROWS = 27, COLUMNS = 27

FROM PUTLAR,
NAME =

, I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME =

, I/O UNIT = 2, FILE = 1, ROWS = 27, COLUMNS = 27

SBMAIN/QFACT

QCHOL/KPRINT

THE LOWER TRIANGLE OF THE TOTAL STIFFNESS MATRIX OF THE PRIMARY STRUCTURE

ROW	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT
1	1	1.4833E 06										
2	1	4.4643E 05	2	1.2834E 06								
3	1	-8.0452E-11	2	4.8000E 01	3	2.6686E 04						
4	1	-1.0000E 05	3	-1.2810E 04	4	7.7077E 04						
5	1	1.9318E-13	2	2.4000E 02	3	1.2000E 02	5	8.0000E 02				
6	1	9.0303E 04	2	-3.4341E 04	6	1.4833E 06						
7	3	6.7687E 03	4	2.3399E 03	7	-1.0000E 05	7	1.2810E 04	8	7.7077E 04		
8	3	1.3627E 03	4	2.3399E 03	6	-1.0000E 05						
9	7	1.2000E 02	9	8.0000E 02								
10	1	-1.0020E 06	2	3.4341E 04	3	8.0452E-11	4	1.0000E 05	5	-1.9318E-13	6	-5.7107E 05
11	1	-3.4341E 04	2	9.0207E 04	3	-4.8000E 01	5	-2.4000E 02	6	4.4643E 05	10	7.7271E-14
12	3	-8.5851E 02	4	5.9634E 03	7	2.8617E 03	8	2.8617E 03	12	1.3928E 04		
13	1	8.0452E-11	2	-4.8000E 01	3	1.9313E 03	4	1.3627E 03	5	-1.2000E 02	7	7.5399E 03
14	1	5.7916E 03	10	-8.0452E-11	11	9.6000E 01	12	1.8887E 04	13	5.3372E 04		
15	1	1.0000E 05	3	-1.3627E 03	4	-4.2831E 04	7	5.7916E 03	8	7.5399E 03	10	-2.0000E 05
16	1	1.9318E-13	13	4.4527E-11	14	1.5415E 05						
17	1	-5.7107E 05	2	2.4000E 02	3	1.2000E 02	5	4.0000E 02	10	-1.9318E-13	15	1.6000E 03
18	3	-2.8617E 03	4	-4.4643E 05	6	-1.0020E 06	8	1.0000E 05	10	1.8061E 05	16	2.9666E 06
19	14	2.0464E-12	17	1.3928E 04	7	8.5851E 02	8	5.9634E 03	12	-6.8681E 03	13	-1.1447E 04
20	3	7.5399E 03	4	-5.7916E 03	7	1.9313E 03	8	-1.3627E 03	9	-1.2000E 02	12	1.1447E 04
21	13	1.3537E 04	14	7.2760E-12	17	-1.8887E 04	18	5.3372E 04				
22	3	-5.7916E 03	4	7.5399E 03	6	1.0000E 05	7	1.3627E 03	8	-4.2831E 04	12	3.4106E-12
23	13	3.6380E-12	14	4.6798E 03	16	-2.0000E 05	18	-7.2760E-12	19	1.5415E 05		
24	7	1.2000E 02	9	4.0000E 02	20	1.6000E 03						
25	10	-3.4341E 04	11	9.0207E 04	13	-4.8000E 01	15	-2.4000E 02	16	4.4643E 05	21	1.2834E 06
26	11	-4.8000E 01	12	-8.5851E 02	13	1.9313E 03	14	1.3627E 03	15	-1.2000E 02	17	-2.8617E 03
27	18	7.5399E 03	12	-5.9634E 03	21	4.8000E 01	22	2.6686E 04				
28	10	1.0000E 05	12	5.9634E 03	13	-1.3627E 03	14	-4.2831E 04	17	-2.8617E 03	18	5.7916E 03
29	19	7.5399E 03	22	1.2810E 04	23	7.7077E 04						
30	11	2.4000E 02	13	1.2000E 02	15	4.0000E 02	21	-2.4000E 02	22	-1.2000E 02	24	8.0000E 02
31	12	2.8617E 03	13	7.5399E 03	14	-5.7916E 03	17	8.5851E 02	18	1.9313E 03	19	-1.3627E 03
32	20	-1.2000E 02	22	6.7687E 03	23	1.3627E 03	25	2.6686E 04				
33	12	-2.8617E 03	13	-5.7916E 03	14	7.5399E 03	16	1.0000E 05	17	-5.9634E 03	18	1.3627E 03
34	19	-4.2831E 04	22	-1.3627E 03	23	2.3399E 03	25	-1.2810E 04	26	7.7077E 04		
35	18	1.2000E 02	20	4.0000E 02	25	-1.2000E 02	27	8.0000E 02				

FROM PUTLAB,

NAME = MASS MAT, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM,

NAME = EL MASS, I/O UNIT = 8, FILE = 1, ROWS = 8, COLUMNS = 24

MSTACK

NBARS 21

MPRINT

THE LOWER TRIANGLE OF THE TOTAL MASS MATRIX OF THE PRIMARY STRUCTURE

ROW	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT
FROM GETDIM.										
NAME = MASS MAT, I/O UNIT = 9, FILE = 9, ROWS = 27, COLUMNS = 27										
1	1	4.0437E-04								
2	2	4.0437E-04								
3	1	-4.2843E-04	3	9.0571E-04						
4	2	-4.2843E-04	4	9.0571E-04						
6	6	4.0437E-04								
7	6	-4.2843E-04	7	9.0571E-04						
8	8	9.0571E-04								
10	10	8.0875E-04								
11	11	8.0875E-04								
12	12	8.0875E-04								
13	10	-8.5687E-04	13	1.8114E-03						
14	11	-8.5687E-04	14	1.8114E-03						
16	16	8.0875E-04								
17	17	8.0875E-04								
18	16	-8.5687E-04	18	1.8114E-03						
19	19	1.8114E-03								
21	21	4.0437E-04								
22	22	9.0571E-04								
23	21	-4.2843E-04	23	9.0571E-04						
25	25	9.0571E-04								
26	26	9.0571E-04								

BPMASS

FROM GETDIM.
NAME = EL MASS, I/O UNIT = 8, FILE = 8, ROWS = 24, COLUMNS = 24

FROM PUTLAR.
NAME = EL MASS, I/O UNIT = 8, FILE = 8, ROWS = 27, COLUMNS = 1

ALARM

ORDER OF UNREDUCED PROBLEM = 27
 NUMBER OF DESIRED MODES = 3
 NUMBER OF REORTHOGONALIZATIONS = 1

ALARM/REVERS

FROM GETDIM,
 NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
 NAME = , I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

ALARM/TRAN

FROM GETDIM,
 NAME = , I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
 NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 27

ALARM/REVERS

FROM GETDIM,
 NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
 NAME = NAMEA , I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

ALARM

FROM PUTLAB,
 NAME = GT , I/O UNIT = 12, FILE = 1, ROWS = 7, COLUMNS = 27

FROM PUTLAB,
 NAME = VR , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

ALARM/QFSOL

FROM GETDIM,
 NAME = NAMEA , I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
 NAME = VR , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
 NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
 NAME = NAMEA , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

ALARM/REVERS

FROM GETDIM,
 NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
 NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

ALARM

FROM GETDIM,
 NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
 NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM/MULT

FROM GETDIM,
 NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM/MULT

FROM GETDIM,
NAME = MASS MAT, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME = 00 R 0, I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = 00 R 0, I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = VT, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = VR, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = VR, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = GT, I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = GT, I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM

ALARM/QFSOL

ALARM/REVERS

ALARM

ALARM/MULT

FROM GETDIM, NAME = MASS MAT,	I/O UNIT = 9,	FILE = 1,	ROWS = 27,	COLUMNS = 27	ALARM/MULT
FROM PUTLAB, NAME = QO R 0	I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM GETDIM, NAME = QO R 0	I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	ALARM/TRAN
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	I/O UNIT = 10,	FILE = 1,	ROWS = 27,	COLUMNS = 27	ALARM/QFSOL
FROM GETDIM, NAME = NAMEA	I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM
FROM GETDIM, NAME = VT	I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
REORTHOGONALIZATION NO. 1					
FROM GETDIM, NAME = VT	I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
ORTHOGONALIZATION WITH VECTOR 1 INNER PRODUCT = 0.2040996E-13					
FROM GETDIM, NAME = VT	I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM PUTLAB, NAME = VR	I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 3,	FILE = 2,	ROWS = 27,	COLUMNS = 27	ALARM/QFSOL
FROM GETDIM, NAME = VR	I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM/REVERS
FROM PUTLAB, NAME = NAMEA	I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	

ALARM

ALARM/MULT

ALARM/TRAN

ALARM/QFSOL

ALARM

ALARM/QFSOL

```

FROM GETDIM,
NAME = NAMEA
, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = GT
, I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = GT
, I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = MASS MAT, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME = QO R 0, I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = QO R 0, I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = NAMEA
, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME =
, I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = NAMEA
, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME =
, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME =
, I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME =
, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = VT
, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

REORTHOGONALIZATION NO. 1

FROM GETDIM,
NAME = VT
, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27
ORTHOGONALIZATION WITH VECTOR 1 INNER PRODUCT = 0.9244525E-07
ORTHOGONALIZATION WITH VECTOR 2 INNER PRODUCT = -0.9168139E-07

FROM GETDIM,
NAME = VT
, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = VR
, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA
, I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = VR
, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA
, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

```

FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	ALARM/QFSOL
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM/REVERS
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM/MULT
FROM PUTLAB, NAME = GT	, I/O UNIT = 17,	FILE = 1,	ROWS = 1,	COLUMNS = 27	ALARM/TRAN
FROM GETDIM, NAME = GT	, I/O UNIT = 17,	FILE = 1,	ROWS = 1,	COLUMNS = 27	ALARM/QFSOL
FROM GETDIM, NAME = MASS MAT,	I/O UNIT = 9,	FILE = 1,	ROWS = 27,	COLUMNS = 27	ALARM
FROM PUTLAB, NAME = 00 R 0	, I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM GETDIM, NAME = 00 R 0	, I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	, I/O UNIT = 10,	FILE = 1,	ROWS = 27,	COLUMNS = 27	
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	, I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME = VT	, I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	

REORTHOGONALIZATION NO. 1

FROM GETDIM, NAME = VT	, I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
ORTHOGONALIZATION WITH VECTOR 1	INNER PRODUCT = -0.4418479E-09				
ORTHOGONALIZATION WITH VECTOR 2	INNER PRODUCT = 0.2948055E-07				
ORTHOGONALIZATION WITH VECTOR 3	INNER PRODUCT = -0.2956169E-07				

FROM GETDIM, NAME = VT	, I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
---------------------------	-----------------	-----------	-----------	--------------	--

FROM PUTLAB, NAME = VR	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 3,	FILE = 2,	ROWS = 27,	COLUMNS = 27	ALARM/QFSOL
FROM GETDIM, NAME = VR	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM/REVERS
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM
FROM PUTLAB, NAME = GT	, I/O UNIT = 17,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM GETDIM, NAME = GT	, I/O UNIT = 17,	FILE = 1,	ROWS = 1,	COLUMNS = 27	ALARM/MULT
FROM GETDIM, NAME = MASS MAT	, I/O UNIT = 9,	FILE = 1,	ROWS = 27,	COLUMNS = 27	
FROM PUTLAB, NAME = 00 R 0	, I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	
FROM GETDIM, NAME = 00 R 0	, I/O UNIT = 14,	FILE = 1,	ROWS = 1,	COLUMNS = 27	ALARM/TRAN
FROM PUTLAB, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	, I/O UNIT = 10,	FILE = 1,	ROWS = 27,	COLUMNS = 27	ALARM/QFSOL
FROM GETDIM, NAME = NAMEA	, I/O UNIT = 11,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	
FROM PUTLAB, NAME =	, I/O UNIT = 9,	FILE = 2,	ROWS = 27,	COLUMNS = 1	
FROM GETDIM, NAME =	, I/O UNIT = 14,	FILE = 1,	ROWS = 27,	COLUMNS = 1	ALARM
FROM GETDIM, NAME = VT	, I/O UNIT = 2,	FILE = 1,	ROWS = 1,	COLUMNS = 27	

REORTHOGONALIZATION NO. 1

ALARM

FROM GETDIM.
NAME = VT
ORTHOGONALIZATION WITH VECTOR 1 I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27
ORTHOGONALIZATION WITH VECTOR 2 INNER PRODUCT = 0.6292606E-09
ORTHOGONALIZATION WITH VECTOR 3 INNER PRODUCT = 0.6617411E-09
ORTHOGONALIZATION WITH VECTOR 4 INNER PRODUCT = 0.7702909E-07
ORTHOGONALIZATION WITH VECTOR 4 INNER PRODUCT = -0.7768267E-07

FROM GETDIM.
NAME = VT
I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB.
NAME = VR
I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = NAMEA
I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM.
NAME = VR
I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = NAMEA
I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = NAMEA
I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = NAMEA
I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = NAMEA
I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = NAMEA
I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = GT
I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = GT
I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = MASS MAT.
I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB.
NAME = 00 R 0
I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = 00 R 0
I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB.
NAME = NAMEA
I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME =
I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM.
NAME = NAMEA
I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

ALARM/QFSOL

ALARM/REVERS

ALARM

ALARM/MULT

ALARM/TRAN

ALARM/QFSOL

ALARM/QFSOL

FROM PUTLAB,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM

REORTHOGONALIZATION NO. 1

FROM GETDIM,
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

ORTHOGONALIZATION WITH VECTOR 1 INNER PRODUCT = 0.4156245E-10

ORTHOGONALIZATION WITH VECTOR 2 INNER PRODUCT = -0.4496375E-10

ORTHOGONALIZATION WITH VECTOR 3 INNER PRODUCT = -0.2561221E-10

ORTHOGONALIZATION WITH VECTOR 4 INNER PRODUCT = 0.3581566E-07

ORTHOGONALIZATION WITH VECTOR 5 INNER PRODUCT = -0.3527832E-07

FROM GETDIM,
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = VR , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

ALARM/QFSOL

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = VR , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

ALARM/REVERS

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM

FROM GETDIM,
NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM,
NAME = MASS MAT, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB,
NAME = QO R O , I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM/MULT

ALARM/TRAN

ALARM/QFSOL

ALARM

ALARM/QFSOL

ALARM/REVERS

```

FROM GETDIM,
NAME = 00 R 0, I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = VT, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

REORTHOGONALIZATION NO. 1

FROM GETDIM,
NAME = VT, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

ORTHOGONALIZATION WITH VECTOR 1 INNER PRODUCT = 0.7187094E-10
ORTHOGONALIZATION WITH VECTOR 2 INNER PRODUCT = 0.7622945E-10
ORTHOGONALIZATION WITH VECTOR 3 INNER PRODUCT = 0.2334594E-10
ORTHOGONALIZATION WITH VECTOR 4 INNER PRODUCT = -0.4571208E-09
ORTHOGONALIZATION WITH VECTOR 5 INNER PRODUCT = 0.1118644E-07
ORTHOGONALIZATION WITH VECTOR 6 INNER PRODUCT = -0.1117307E-07

FROM GETDIM,
NAME = VT, I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM PUTLAB,
NAME = VR, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 27

FROM GETDIM,
NAME = VR, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA, I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA, I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

```

ALARM

FROM GETDIM.
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM/MULT

FROM GETDIM.
NAME = GT , I/O UNIT = 17, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = MASS MAT, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM PUTLAB.
NAME = QO R 0 , I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = QO R 0 , I/O UNIT = 14, FILE = 1, ROWS = 1, COLUMNS = 27

ALARM/TRAN

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

ALARM/QFSOL

FROM GETDIM.
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = , I/O UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

ALARM

FROM GETDIM.
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

FROM GETDIM.
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

REORTHOGONALIZATION NO. 1

FROM GETDIM.
NAME = VT , I/O UNIT = 2, FILE = 1, ROWS = 1, COLUMNS = 27

ORTHOGONALIZATION WITH VECTOR 1
INNER PRODUCT = 0.4047544E-10

ORTHOGONALIZATION WITH VECTOR 2
INNER PRODUCT = 0.5284853E-10

ORTHOGONALIZATION WITH VECTOR 3
INNER PRODUCT = 0.7542228E-10

ORTHOGONALIZATION WITH VECTOR 4
INNER PRODUCT = 0.1088405E-09

ORTHOGONALIZATION WITH VECTOR 5
INNER PRODUCT = -0.2672578E-09

ORTHOGONALIZATION WITH VECTOR 6
INNER PRODUCT = 0.1365341E-07

ORTHOGONALIZATION WITH VECTOR 7
INNER PRODUCT = -0.1354245E-07

MODE NUMBER	FREQUENCY (RAD / SEC)	FREQUENCY (HERTZ)	FREQ. SORD. ERROR BOUND (PERCENT)
1	2.064654E 03	3.285999E 02	5.251828E-04
2	2.172310E 03	3.457339E 02	1.256381E-03
3	3.943515E 03	6.276299E 02	4.653938E-01

4	4.720422E 03	7.512783E 02	3.929691E 00	ALARM
5	5.340125E 03	8.499072E 02	6.654888E 00	
	FROM PUTLAB.			
	NAME = YT	I/O UNIT = 14.	FILE = 1.	ROWS = 3.
				COLUMNS = 7
	FROM GETDIM.			
	NAME = YT	I/O UNIT = 14.	FILE = 1.	ROWS = 3.
				COLUMNS = 7
	FROM GETDIM.			
	NAME = GT	I/O UNIT = 12.	FILE = 1.	ROWS = 7.
				COLUMNS = 27
	FROM PUTLAB.			
	NAME = Q0 R 0	I/O UNIT = 11.	FILE = 1.	ROWS = 3.
				COLUMNS = 27
	FROM GETDIM.			
	NAME = Q0 R 0	I/O UNIT = 11.	FILE = 1.	ROWS = 3.
				COLUMNS = 27
	FROM PUTLAB.			
	NAME = XTN	I/O UNIT = 2.	FILE = 1.	ROWS = 3.
				COLUMNS = 27
	FROM GETDIM.			
	NAME = BND CNO.	I/O UNIT = 1.	FILE = 1.	ROWS = 13.
				COLUMNS = 11

ALARM/MULT

ALARM

ALARM/MSOUT

ALARM/MSOUT

PRIMARY STRUCTURE MODE SHAPE 1 ITERATION NO. 0

NODE	DX	DY	DZ	RX	RY	RZ
1	-8.970004E-03	1.393531E-03	-	7.547605E-02	-6.401235E-02	-2.609992E-02
2	-8.882493E-03	-	-	-7.678038E-02	-6.509960E-02	2.777019E-02
3	-4.324209E-03	1.332145E-03	6.747809E-01	-9.827828E-02	1.372055E-04	3.672943E-05
4	-4.604518E-03	-	6.929107E-01	1.081847E-01	-3.646200E-04	-5.088725E-05
5	-	1.303248E-03	-	7.639074E-02	6.363547E-02	2.617327E-02
6	-	-	-	-7.779825E-02	6.480199E-02	-2.787201E-02

ALARM/MSOUT

PRIMARY STRUCTURE MODE SHAPE 2 ITERATION NO. 0

NODE	DX	DY	DZ	RX	RY	RZ
1	3.060817E-03	-1.876410E-03	-	-5.033096E-02	4.330970E-02	5.937070E-02
2	-4.484776E-03	-	-	-4.577913E-02	-4.099749E-02	5.731023E-02
3	-3.753458E-04	8.621539E-04	-6.224238E-01	3.406258E-01	-1.409782E-03	1.887089E-04
4	-1.654685E-03	-	5.947985E-01	3.360170E-01	4.002347E-04	-8.166939E-05
5	-	5.767981E-04	-	-5.146280E-02	-3.983737E-02	-5.899318E-02
6	-	-	-	-4.741276E-02	3.961587E-02	-5.747367E-02

ALARM/MSOUT

PRIMARY STRUCTURE MODE SHAPE 3 ITERATION NO. 0

NODE	DX	DY	DZ	RX	RY	RZ
1	-2.065503E-03	2.684931E-04		5.392026E-01	1.556076E-01	-4.806031E-02
2	5.152807E-03			-5.460407E-01	1.632882E-01	4.863043E-02
3	-1.521543E-03	-1.549330E-03	5.114116E-03	7.144135E-02	1.319461E-01	-4.529824E-02
4	4.534938E-04		7.572390E-03	-7.063854E-02	1.275337E-01	4.535979E-02
5		-9.030532E-04		-3.644210E-01	1.463678E-01	-4.253652E-02
6				3.611561E-01	1.389596E-01	4.208943E-02

SBMAIN/RESTOR

FROM GETDIM.
NAME = TOTSTIFF, I/O UNIT = 4, FILE = 2, ROWS = 27, COLUMNS = 27

FROM PUTLAB.
NAME = TOTSTIFF, I/O UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM.
NAME = XTN, I/O UNIT = 2, FILE = 1, ROWS = 3, COLUMNS = 27

FROM PUTLAB.
NAME = XTN, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM.
NAME = XTN, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM.
NAME = LOADS, I/O UNIT = 4, FILE = 1, ROWS = 6, COLUMNS = 6

FROM PUTLAB.
NAME = LOADS, I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB.
NAME = LOADS, I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

PRIMARY STRUCTURE NODES ASSOCIATED WITH TILE NO. 1

LOCDEF

1 3
2 4

FROM PUTLAB.
NAME = LOADS , I/O UNIT = 9, FILE = 2, ROWS = 1, COLUMNS = 1

HEXTIL/KMOSQ

FROM GETDIM.
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

FROM GETDIM.
NAME = MASS MAT, I/O UNIT = 20, FILE = 2, ROWS = 1, COLUMNS = 48

FROM PUTLAB.
NAME = MASS MAT, I/O UNIT = 17, FILE = 1, ROWS = 48, COLUMNS = 48

HEXTIL/PARTIN

FROM GETDIM.
NAME = MASS MAT, I/O UNIT = 17, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

HEXTIL/PARTIN

FROM GETDIM.
NAME = MASS MAT, I/O UNIT = 17, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

HEXTIL/PARTIN

FROM GETDIM.
NAME = MASS MAT, I/O UNIT = 17, FILE = 1, ROWS = 48, COLUMNS = 48

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 11, FILE = 2, ROWS = 12, COLUMNS = 12

HEXTIL/PARTIN

FROM GETDIM.
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1

HEXTIL/PARTIN

FROM GETDIM.
NAME = LOAD-V , I/O UNIT = 15, FILE = 1, ROWS = 48, COLUMNS = 1

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 13, FILE = 3, ROWS = 12, COLUMNS = 1

HEXTIL/COPY

FROM GETDIM.
NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

FROM PUTLAB.
NAME = NAMEA , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

HEXTIL/MULT

FROM GETDIM.
NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

FROM GETDIM.
NAME = NAMEA , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM PUTLAB, NAME = 00 R 0 , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36	HEXTIL/MULT
FROM GETDIM, NAME = 00 R 0 , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36	HEXTIL/LOWTRI
FROM PUTLAB, NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 36	
FROM GETDIM, NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12	HEXTIL/MULT
FROM GETDIM, NAME = LOADS , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1	
FROM PUTLAB, NAME = 00 R 0 , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1	
FROM GETDIM, NAME = NAMEA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1	HEXTIL/SUB
FROM GETDIM, NAME = 00 R 0 , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1	
FROM GETDIM, NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36	HEXTIL/MULT
FROM GETDIM, NAME = NAMEA , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1	
FROM PUTLAB, NAME = 00 R 0 , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1	
FROM GETDIM, NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 36	PODSYM/QFACT
FROM PUTLAB, NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36	
FROM PUTLAB, NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36	

THE LOWER TRIANGLE OF THE TOTAL STIFFNESS MATRIX OF THE TILE

7-115

13	-4.7930E 09	14	2.2303E 10	15	-2.0205E 08	16	-2.5652E 09	17	3.9236E 10	18	1.3030E 09
19	2.5270E 09	20	2.9783E 10	21	-2.3724E 08	22	4.6562E 09	23	5.1566E 10		
24	-2.3326E 09	2	-2.4836E 09	3	-2.4685E 09	4	-3.1230E 09	5	-1.6982E 09	6	-2.3153E 09
7	-1.8492E 09	8	-3.3516E 09	9	-2.3253E 09	10	-2.2482E 09	11	-2.2582E 09	12	-1.8799E 09
13	4.2143E 08	14	2.0206E 08	15	-1.0633E 09	16	5.6553E 08	17	1.3030E 09	18	1.2003E 09
19	1.0837E 09	20	2.3724E 08	21	1.2105E 09	22	1.3892E 09	23	1.7175E 09	24	4.9806E 09
25	5.0935E 09	2	-3.1746E 08	3	1.1738E 09	4	4.3276E 09	5	-1.6942E 07	6	1.0343E 09
7	4.8730E 09	8	-5.0445E 07	9	-1.5024E 09	10	4.1057E 09	11	4.0493E 08	12	-1.0062E 09
13	-1.2184E 10	14	8.0925E 08	15	-2.2784E 09	16	-9.1979E 09	17	-1.5999E 09	18	-6.3344E 08
19	-1.1561E 10	20	1.5125E 09	21	2.5292E 09	22	-8.5703E 09	23	-7.4186E 08	24	8.0886E 08
25	2.7271E 10	2	5.0886E 09	3	1.1452E 09	4	-3.4390E 07	5	4.8780E 09	6	-1.1788E 09
7	-3.3954E 08	8	4.3231E 09	9	1.0057E 09	10	3.8887E 08	11	4.1101E 09	12	-1.0348E 09
13	7.8200E 08	14	-1.2192E 10	15	-2.2494E 09	16	1.5234E 09	17	-1.1553E 10	18	2.5578E 09
19	-1.5727E 09	20	-9.2049E 09	21	-6.0487E 08	22	-7.5274E 08	23	-8.5633E 09	24	8.3747E 08
25	1.2161E 10	26	2.7271E 10	27	2.4056E 09	28	2.7271E 10	29	-1.5125E 09		
27	-2.0947E 09	2	-2.0705E 09	3	-7.1384E 08	4	-1.7280E 09	5	-2.2081E 09	6	2.8759E 08
7	-2.1840E 09	8	-1.6995E 09	9	2.8807E 08	10	-1.8176E 09	11	-1.8461E 09	12	9.2762E 08
13	4.7660E 09	14	4.7896E 09	15	7.4591E 08	16	3.6231E 09	17	4.9149E 09	18	-5.1624E 08
19	4.9385E 09	20	3.6511E 09	21	-5.1672E 08	22	3.7420E 09	23	3.7140E 09	24	-1.2040E 09
25	-3.3171E 09	26	-3.3171E 09	27	2.4056E 09	28	2.7271E 10	29	3.1746E 08		
28	1.43276E 09	2	1.6942E 07	3	1.0343E 09	4	5.0935E 09	5	5.0886E 09	6	-1.1452E 09
7	4.1057E 09	8	-4.0493E 08	9	-1.0062E 09	10	4.8730E 09	11	5.0445E 07	12	-1.1502E 09
13	-9.1979E 09	14	1.5999E 09	15	-6.3344E 08	16	-1.2184E 10	17	-8.0925E 08	18	-2.2784E 09
19	-8.5703E 09	20	7.4186E 08	21	8.0886E 08	22	-1.1561E 10	23	-1.5125E 09	24	2.5292E 09
25	9.1403E 09	26	3.7063E 08	27	-1.5481E 09	28	2.7271E 10	29	5.0886E 09		
29	3.4390E 07	2	4.8780E 09	3	1.1788E 09	4	3.9954E 08	5	5.0886E 09	6	-1.1452E 09
7	-3.8887E 08	8	4.1101E 09	9	1.0343E 09	10	-5.1387E 06	11	4.3231E 09	12	-1.0057E 09
13	-1.5234E 09	14	-1.1553E 10	15	-2.5579E 09	16	7.8200E 08	17	-1.2192E 10	18	2.2499E 09
19	7.5275E 08	20	-8.5633E 09	21	-8.3747E 08	22	1.5727E 09	23	-9.2049E 09	24	6.0487E 08
25	-3.7065E 08	26	-2.2155E 09	27	-3.0466E 09	28	1.2161E 10	29	2.7271E 10		
30	-1.17280E 09	2	2.2081E 09	3	2.8759E 08	4	-2.0947E 09	5	5.0886E 09	6	-1.1452E 09
7	-1.8176E 09	8	1.8461E 09	9	9.2762E 08	10	-2.1840E 09	11	1.6995E 09	12	2.8807E 08
13	3.6231E 09	14	-4.9149E 09	15	-5.1624E 08	16	4.7660E 09	17	-4.7896E 09	18	7.4591E 08
19	3.7420E 09	20	-3.7140E 09	21	-1.2040E 09	22	4.9385E 09	23	-3.6511E 09	24	-5.1672E 08
25	-1.5481E 09	26	3.0466E 09	27	7.1582E 07	28	-3.3171E 09	29	3.3171E 09	30	2.4056E 09
31	4.8730E 09	2	5.0445E 07	3	1.1502E 09	4	4.1057E 09	5	-4.0493E 08	6	1.0062E 09
7	5.0935E 09	8	3.1746E 08	9	-1.1738E 09	10	4.3276E 09	11	1.6942E 07	12	-1.0343E 09
13	-1.1561E 10	14	-1.5125E 09	15	-2.5292E 09	16	-8.5703E 09	17	7.4186E 08	18	-8.0886E 08
19	-1.2184E 10	20	-8.0925E 08	21	2.2784E 09	22	-9.1979E 09	23	1.5999E 09	24	6.3344E 08
25	-2.8155E 09	26	-3.7065E 08	27	-3.0466E 09	28	-1.0465E 10	29	1.2161E 10	30	-1.3403E 09
31	2.7271E 10	2	4.3231E 09	3	1.0057E 09	4	-3.8887E 08	5	4.1101E 09	6	-1.0348E 09
7	3.3954E 08	8	5.0886E 09	9	1.1452E 09	10	3.8900E 07	11	4.8780E 09	12	-1.1788E 09
13	1.5727E 09	14	-9.2049E 09	15	-6.0487E 08	16	7.5275E 08	17	-8.5633E 09	18	8.3747E 08
19	-7.8200E 08	20	-1.2192E 10	21	-2.2499E 09	22	-1.5234E 09	23	-1.1553E 10	24	2.5578E 09
25	3.7063E 08	26	9.1403E 09	27	-1.5481E 09	28	1.2161E 10	29	-1.0465E 10	30	1.3403E 09
31	-1.2161E 10	32	2.7271E 10	3	2.8807E 08	4	1.8176E 09	5	-1.8461E 09	6	9.2762E 08
7	2.1840E 09	8	-2.0705E 09	9	-7.1384E 08	10	1.7280E 09	11	-2.2081E 09	12	2.8759E 08
13	-4.9385E 09	14	3.6511E 09	15	-5.1672E 08	16	-3.7420E 09	17	3.7140E 09	18	-1.2040E 09
19	4.7896E 09	20	4.7896E 09	21	7.4591E 08	22	-3.6231E 09	23	4.9149E 09	24	-5.1624E 08
25	3.0466E 09	26	-1.5481E 09	27	-7.1581E 07	28	1.3405E 09	29	-1.3405E 09	30	-1.5575E 09
31	3.3171E 09	32	-3.3171E 09	33	2.4056E 09	4	4.8730E 09	5	-5.0445E 07	6	1.1502E 09
7	4.1057E 09	8	4.0493E 08	9	1.0062E 09	10	5.0935E 09	11	-3.1746E 08	12	-1.1738E 09
13	-8.5703E 09	14	-7.4186E 08	15	-8.0886E 08	16	-1.1561E 10	17	1.5125E 09	18	-2.5292E 09
19	-9.1979E 09	20	-1.5999E 09	21	6.3344E 08	22	-1.2184E 10	23	8.0925E 08	24	2.2784E 09
25	-1.0465E 10	26	-1.2161E 10	27	-1.3405E 09	28	-2.8155E 09	29	3.7065E 08	30	-3.0466E 09
31	9.1403E 09	32	-3.7064E 08	33	1.5481E 09						

35	1	3.8987E 08	2	4.1101E 09	3	1.0348E 09	4	5.1395E 06	5	4.3231E 09	6	-1.0057E 09
	7	-3.4390E 07	8	4.8780E 09	9	1.1788E 09	10	-3.3954E 08	11	5.0886E 09	12	-1.1452E 09
	13	-7.5275E 08	14	-8.5633E 09	15	-8.3747E 08	16	-1.5727E 09	17	-9.2049E 09	18	6.0487E 08
	19	1.5234E 09	20	-1.1553E 10	21	-2.5578E 09	22	7.8200E 08	23	-1.2192E 10	24	2.2498E 09
	25	-1.2161E 10	26	-1.0465E 10	27	-1.3405E 09	28	-3.7064E 08	29	9.1404E 09	30	1.5481E 09
	31	3.7065E 08	32	-2.8155E 09	33	-3.0466E 09	34	1.2161E 10	35	2.7271E 10		
36	1	1.8176E 09	2	1.8461E 09	3	9.2762E 08	4	2.1840E 09	5	1.6995E 09	6	2.8807E 08
	7	1.7280E 09	8	2.2081E 09	9	2.8759E 08	10	2.0947E 09	11	2.0705E 09	12	-7.1384E 08
	13	-3.7420E 09	14	-3.7140E 09	15	-1.2040E 09	16	-4.9385E 09	17	-3.6511E 09	18	-5.1672E 08
	19	-3.6231E 09	20	-4.9149E 09	21	-5.1624E 08	22	-4.7660E 09	23	-4.7896E 09	24	7.4591E 08
	25	1.3405E 09	26	1.3405E 09	27	-1.5575E 09	28	3.0466E 09	29	1.5481E 09	30	-7.1580E 07
	31	1.5481E 09	32	3.0466E 09	33	-7.1581E 07	34	3.3171E 09	35	3.3171E 09	36	2.4056E 09

FROM GETDIM.

NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM GETDIM.

NAME = 00 R 0, I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM.

NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM PUTLAB.

NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM.

NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM.

NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM.

NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = DEFLECT, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM.

NAME = DEFLECT, I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB.

NAME = DEFLECT, I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM.

NAME = NAMEA, I/O UNIT = 11, FILE = 2, ROWS = 12, COLUMNS = 12

FROM GETDIM.

NAME = LOADS, I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

PODSYM/QFSOL

PODSYM/REVERS

PODSYM/REVERS

PODSYM/QBSOL

PODSYM/REVERS

HEXTIL/MULT

FROM PUTLAB, NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1	HEXTIL/MULT
FROM GETDIM, NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12	HEXTIL/MATB
FROM GETDIM, NAME = DEFLECT , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1	
FROM GETDIM, NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1	HEXTIL/ADD
FROM GETDIM, NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA , I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1	
FROM GETDIM, NAME = NAMEA , I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1	HEXTIL/SUB
FROM GETDIM, NAME = NAMEA , I/O UNIT = 13, FILE = 3, ROWS = 12, COLUMNS = 1	
FROM PUTLAB, NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1	
FROM GETDIM, NAME = LOADS , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1	HEXTIL
FROM GETDIM, NAME = DEFLECT , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1	

WRDSP

TPS DISPLACEMENTS FOR TILE NO. 1 AND ITERATION NO. 1

NODE	X COMPONENT(U)	Y COMPONENT(V)	Z COMPONENT(W)
1	-1.6971547E-02	-8.0409721E-03	0.0
2	-1.7019942E-02	9.5975474E-03	0.0
3	-4.3070577E-03	1.3616927E-02	6.7478091E-01
4	-4.6500936E-03	-1.3523087E-02	6.9291073E-01
5	-3.4964514E-01	-6.5267026E-02	-2.8623965E-02
6	-4.6167761E-01	-5.2358858E-02	-2.4896864E-02
7	-3.5009652E-01	6.4872742E-02	7.1123725E-01
8	-4.6230811E-01	4.6163566E-02	7.2678566E-01
9	-5.1008344E-01	-6.4404428E-02	-6.9427192E-02
10	-6.2429321E-01	-5.6888022E-02	-6.0472123E-02
11	-5.1024497E-01	5.8949400E-02	7.6677203E-01
12	-6.2455195E-01	4.7697131E-02	7.7873868E-01
13	-8.5776526E-01	-6.5320253E-02	-8.8062346E-02
14	-9.7251564E-01	-6.5239310E-02	-7.6538503E-02
15	-8.5770833E-01	4.9526427E-02	7.9832608E-01
16	-9.7246242E-01	4.9140170E-02	8.0864328E-01

HEXTIL

FROM GETDIM,
NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

NUM = 1.42600D 03

FROM GETDIM,
NAME = MASS MAT, I/O UNIT = 20, FILE = 2, ROWS = 1, COLUMNS = 48

DEN = 8.28632D-04

FROM GETDIM,
NAME = ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN2

SRAIN2

STRESSES FOR ISOLATOR AND ARRESTOR FOUR TILE NO. 1 AND ITERATION NO. 1

LOCAL COORDINATES			STRESSES								
X	Y	Z	XX	YY	ZZ	XY	YZ	ZX			
ELEMENT NUMBER											
1	3.9434E 00	3.9434E 00	3.1816E 02	3.1797E 02	3.3125E 02	5.0995E-02	9.9824E 00	-1.2580E 02			
2	3.9434E 00	1.0566E 00	3.2867E 02	3.2867E 02	3.4239E 02	6.8965E-02	8.9973E 00	-1.0633E 02			
3	1.0566E 00	3.9434E 00	7.8867E-02	-1.8944E 02	-1.9736E 02	-5.0285E-02	-1.0789E 01	-1.2353E 02			
4	1.0566E 00	1.0566E 00	7.8867E-02	-2.0991E 02	-2.0986E 02	2.1861E 02	6.9675E-02	-1.0449E 01	-1.0405E 02		
5	3.9434E 00	3.9434E 00	3.1951E 02	3.1919E 02	3.3251E 02	7.5297E-02	9.9867E 00	-1.2601E 02			
6	3.9434E 00	1.0566E 00	3.3022E 02	3.2990E 02	3.4366E 02	7.1162E-02	9.0016E 00	-1.0656E 02			
7	1.0566E 00	3.9434E 00	-1.8685E 02	-1.8687E 02	-1.9481E 02	-7.4355E-02	-1.0797E 01	-1.2374E 02			
8	1.0566E 00	1.0566E 00	-2.0725E 02	-2.0727E 02	-2.1604E 02	7.2104E-02	-1.0458E 01	-1.0427E 02			
ELEMENT NUMBER											
1	3.9434E 00	3.9434E 00	7.7773E 01	1.5870E 02	2.1887E 02	-2.4019E 01	5.0560E 01	6.5938E 01			
2	3.9434E 00	1.0566E 00	8.3563E 01	1.6855E 02	2.2581E 02	2.5497E 01	-3.7834E 01	8.6958E 01			
3	1.0566E 00	3.9434E 00	-5.0892E 01	-9.1930E 01	-1.1594E 02	-2.3755E 01	-2.9080E 01	5.9393E 01			
4	1.0566E 00	1.0566E 00	-5.8948E 01	-1.0937E 02	-1.2940E 02	2.5761E 01	2.0156E 01	8.1291E 01			
5	3.9434E 00	3.9434E 00	4.8780E 01	1.0573E 02	2.1354E 02	-2.6846E 01	5.6915E 01	-2.6436E 02			
6	3.9434E 00	1.0566E 00	5.5022E 01	1.1583E 02	2.2051E 02	3.9874E 01	-3.1480E 01	-2.6213E 02			
7	1.0566E 00	3.9434E 00	-4.0041E 01	-6.5375E 01	-1.1332E 02	-2.6472E 01	-4.1519E 01	-2.7091E 02			
8	1.0566E 00	1.0566E 00	-4.7646E 01	-8.2545E 01	-1.2670E 02	4.0248E 01	7.7181E 00	-2.6780E 02			

FROM GETDIM, ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81
 NAME =

FROM GETDIM, ISO, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1
 NAME = A G-56.

SRAIN

SRAIN

STRESSES AND DIRECT STRAINS FOR TILE NO. 1 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES			STRAINS			STRESSES					
		X	Y	Z	XX	YY	ZZ	XX	YY	ZZ	XY	YZ	ZX
1	0.	2.50	2.50	0.05	1.198E-03	-7.651E-04	4.203E-02	6.291E 01	6.279E 01	6.537E 01	3.872E-03	-5.657E-01	-1.150E 02
2	0.	2.50	2.50	0.60	-7.524E-05	-4.741E-04	7.777E-03	8.450E 00	2.495E 01	4.917E 01	3.786E 00	-5.701E-01	-9.646E 01
3	0.	2.50	2.50	2.10	-1.564E-05	-1.993E-04	3.345E-03	-5.246E 00	-1.259E 01	1.989E 01	-9.106E-01	-3.502E-01	-4.995E 01

FROM GETDIM.

NAME = ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN3

SRAIN3

STRESSES AND TOTAL STRAINS FOR COATING FOR TILE NO. 1 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES	X	Y	Z	XX	YY	XY	STRAINS	XX	YY	XY	STRESSES	XX	YY	XY	#
3	0.	2.50	3.10	1.101E-05	-3.054E-05	-2.787E-05	4.328E 01	-3.556E 02	-2.230E 02								
FROM GETDIM.																	
NAME = LOADS , I/O UNIT = 9, FILE = 2, ROWS = 1, COLUMNS = 1																	
FROM GETDIM.																	
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1																	
FROM PUTLAR,																	
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1																	

LOCDEF

PRIMARY STRUCTURE NODES ASSOCIATED WITH TILE NO. 2

LOCDEF

3 5
4 6

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 9, FILE = 2, ROWS = 1, COLUMNS = 1

HEXTIL/MULT

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = 00 R 0 , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

HEXTIL/SUB

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 13, FILE = 2, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = 00 R 0 , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

HEXTIL/MULT

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 15, FILE = 2, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = 00 R 0 , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1

PODSYM/QFSOL

FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = 00 R 0 , I/O UNIT = 14, FILE = 2, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

PODSYM/REVERS

FROM GETDIM,
NAME = , I/O UNIT = 20, FILE = 3, ROWS = 36, COLUMNS = 36

FROM PUTLAB,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

PODSYM/REVERS

FROM PUTLAB,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

PODSYM/QBSOL

FROM GETDIM,
NAME = , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 36

FROM GETDIM,
NAME = , I/O UNIT = 12, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = DEFLECT , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = , I/O UNIT = 18, FILE = 1, ROWS = 36, COLUMNS = 1

FROM GETDIM,
NAME = DEFLECT , I/O UNIT = 17, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = DEFLECT , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

PODSYM/REVERS

HEXTIL/MULT

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 2, ROWS = 12, COLUMNS = 12

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1

HEXTIL/MATB

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 11, FILE = 1, ROWS = 36, COLUMNS = 12

FROM GETDIM,
NAME = DEFLECT , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

HEXTIL/ADD

FROM GETDIM,
NAME = 00 R 0 , I/O UNIT = 18, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1

HEXTIL/SUB

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 17, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 13, FILE = 3, ROWS = 12, COLUMNS = 1

FROM PUTLAB,
NAME = NAMEA , I/O UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1

HEXTIL

FROM GETDIM,
NAME = NAMEA , I/O UNIT = 14, FILE = 1, ROWS = 12, COLUMNS = 1

FROM GETDIM,
NAME = DEFLECT , I/O UNIT = 19, FILE = 1, ROWS = 36, COLUMNS = 1

TPS DISPLACEMENTS FOR TILE NO. 2 AND ITERATION NO. 1

WRDSP

NODE	X COMPONENT(U)	Y COMPONENT(V)	Z COMPONENT(W)
1	-4.3070577E-03	1.3616927E-02	6.7478091E-01
2	-4.6500936E-03	-1.3523087E-02	6.9291073E-01
3	7.9544336E-03	-8.2455948E-03	0.0
4	8.1002489E-03	9.7247809E-03	0.0
5	3.3711821E-01	8.2391739E-02	7.1178514E-01
6	4.5692670E-01	6.3660800E-02	7.2630262E-01
7	3.3649689E-01	-5.5546179E-02	-2.8127499E-02
8	4.5644969E-01	-4.2605925E-02	-2.5457956E-02
9	4.9721396E-01	7.6884329E-02	7.6811326E-01
10	6.1925977E-01	6.5673232E-02	7.7760375E-01
11	4.9696493E-01	-5.4257140E-02	-6.8276584E-02
12	6.1908555E-01	-4.6722915E-02	-6.1815925E-02
13	8.4472209E-01	6.8751276E-02	8.0009919E-01
14	9.6734041E-01	6.8364263E-02	8.0721301E-01
15	8.4477931E-01	-5.3963281E-02	-8.6621642E-02
16	9.6739978E-01	-5.3882051E-02	-7.8283370E-02

FROM GETDIM,

NAME = C-MATRIX, I/O UNIT = 13, FILE = 1, ROWS = 48, COLUMNS = 48

HEXTIL

NUM = 1.42895D 03

FROM GETDIM,

NAME = MASS MAT, I/O UNIT = 20, FILE = 2, ROWS = 1, COLUMNS = 48

DEN = 8.17423D-04

FROM GETDIM,

NAME = ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN2

SRAIN2

STRESSES FOR ISOLATOR AND ARRESTOR FOR TILE NO. 2 AND ITERATION NO. 1

LOCAL COORDINATES			STRESSES									
X	Y	Z	ELEMENT NUMBER	1	XX	YY	ZZ	XY	YZ	ZX		
1												
3.9434E 00	3.9434E 00	7.8867E-02	-1.9421E 02	-1.9416E 02	-2.0227E 02	5.0730E-02	-7.3693E 00	1.2415E 02				
3.9434E 00	1.0566E 00	7.8867E-02	-2.0571E 02	-2.0566E 02	-2.1424E 02	-6.9623E-02	-6.9874E 00	1.0329E 02				
1.0566E 00	3.9434E 00	7.8867E-02	3.1404E 02	3.1386E 02	3.2636E 02	4.9972E-02	1.4765E 01	1.2645E 02				
1.0566E 00	1.0566E 00	7.8867E-02	3.3352E 02	3.3334E 02	3.4725E 02	-7.0380E-02	1.3794E 01	1.0555E 02				
3.9434E 00	3.9434E 00	2.1132E-02	-1.9150E 02	-1.9152E 02	-1.9965E 02	7.4425E-02	-7.3739E 00	1.2436E 02				
3.9434E 00	1.0566E 00	2.1132E-02	-2.0303E 02	-2.0305E 02	-2.1165E 02	-7.2986E-02	-6.9921E 00	1.0352E 02				
1.0566E 00	3.9434E 00	2.1132E-02	3.1543E 02	3.1511E 02	3.2826E 02	7.2974E-02	1.4773E 01	1.2666E 02				
1.0566E 00	1.0566E 00	2.1132E-02	3.3488E 02	3.3456E 02	3.4851E 02	-7.4437E-02	1.3602E 01	1.0578E 02				
2												
3.9434E 00	3.9434E 00	8.8867E-01	-5.1939E 01	-9.5343E 01	-1.1903E 02	2.4016E 01	-2.9370E 01	-5.9555E 01				
3.9434E 00	1.0566E 00	8.8867E-01	-5.8051E 01	-1.0617E 02	-1.2680E 02	-2.5584E 01	2.0042E 01	-8.1794E 01				
1.0566E 00	3.9434E 00	8.8867E-01	7.6894E 01	1.5562E 02	2.1631E 02	2.3808E 01	5.1489E 01	-6.5424E 01				
1.0566E 00	1.0566E 00	8.8867E-01	8.4641E 01	1.7211E 02	2.2892E 02	-2.5792E 01	-3.6976E 01	-8.8397E 01				
3.9434E 00	3.9434E 00	3.1132E-01	-4.0686E 01	-6.8492E 01	-1.1633E 02	2.6824E 01	-3.6492E 01	2.7123E 02				
3.9434E 00	1.0566E 00	3.1132E-01	-4.7185E 01	-7.9529E 01	-1.2412E 02	-4.0009E 01	1.2919E 01	2.6780E 02				
1.0566E 00	3.9434E 00	3.1132E-01	4.8233E 01	1.0280E 02	2.1100E 02	2.6524E 01	6.3181E 01	2.6536E 02				
1.0566E 00	1.0566E 00	3.1132E-01	5.5594E 01	1.1908E 02	2.2359E 02	-4.0309E 01	-2.5285E 01	2.6120E 02				

SRAIN

FROM GETDIM, ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

NAME = A G-56, I/O UNIT = 20, FILE = 1, ROWS = 3, COLUMNS = 1

SRAIN

STRESSES AND DIRECT STRAINS FOR TILE NO. 2 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES	* Z	XX	YY	ZZ	* ZZ	STRESSES	XX	YY	ZZ	YZ	ZX	*
1	0.	2.50	2.50	0.05	1.196E-03	-7.480E-04	4.203E-02	6.293E 01	6.281E 01	6.539E 01	-4.916E-03	3.551E 00	1.150E 02	
2	0.	2.50	2.50	0.60	-7.604E-05	-4.734E-04	7.781E-03	8.432E 00	2.501E 01	4.919E 01	-3.815E 00	2.439E 00	9.630E 01	
3	0.	2.50	2.50	2.10	-1.521E-05	-1.991E-04	3.348E-03	-5.200E 00	-1.256E 01	1.991E 01	9.067E-01	1.016E 00	5.003E 01	

FROM GETDIM,

NAME = ISO, I/O UNIT = 7, FILE = 1, ROWS = 3, COLUMNS = 81

SRAIN3

SRAIN3

STRESSES AND TOTAL STRAINS FOR COATING FOR TILE NO. 2 AND ITERATION NO. 1

MEM	TEMP	LOCAL COORDINATES	X	Y	Z	XX	YY	XY	STRESSES	XX	YY	XY	*
3	0	2.50	2.50	3.10	1.166E-05	-3.058E-05	2.786E-05	5.138E 01	-3.541E 02	2.229E 02			

LOCDEF

FROM GETDIM, NAME = NAMEA	, 1/0 UNIT = 9, FILE = 2, ROWS = 1, COLUMNS = 1
FROM GETDIM, NAME = NAMEA	, 1/0 UNIT = 14, FILE = 2, ROWS = 12, COLUMNS = 1
FROM GETDIM, NAME = XTN	, 1/0 UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1
FROM PUTLAB, NAME = XTN	, 1/0 UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1
FROM GETDIM, NAME = TOTSTIFF	, 1/0 UNIT = 9, FILE = 1, ROWS = 27, COLUMNS = 27
FROM GETDIM, NAME = XTN	, 1/0 UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1
FROM PUTLAB, NAME = Q0	, 1/0 UNIT = 12, FILE = 1, ROWS = 27, COLUMNS = 1
FROM GETDIM, NAME = Q0	, 1/0 UNIT = 12, FILE = 1, ROWS = 27, COLUMNS = 1
FROM GETDIM, NAME = XTN	, 1/0 UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

SBMAIN/MULT

SBMAIN/READMT

SBMAIN

SUM TILE NUM = 2.85495D 03
P.S. NUM = 3.53947D 03
SUM NUM = 6.39442D 03

SBMAIN/READMT

FROM GETDIM,
NAME = EL MASS , 1/0 UNIT = 8, FILE = 1, ROWS = 27, COLUMNS = 1

SBMAIN

SUM TILE DEN = 1.64606D-03
P.S. DEN = 1.96728D-04
SUM DEN = 1.84278D-03

SBMAIN

SBMAIN/QFACT

QCHOL/KPRINT

THE LOWER TRIANGLE OF THE TOTAL STIFFNESS MATRIX OF THE PRIMARY STRUCTURE

ROW	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT	COL	ELEMENT
1	1	1.4830E 06										
2	1	4.4643E 05	2	1.2831E 06								
3	1	-8.0452E-11	2	4.8000E 01	3	2.6686E 04						
4	1	-1.0000E 05	3	-1.2810E 04	4	7.7077E 04	5	8.0000E 02				
5	1	1.9318E-13	2	2.4000E 02	3	1.2000E 02						
6	1	9.0303E 04	2	-3.4341E 04	6	1.4830E 06						
7	3	6.7687E 03	4	-1.3627E 03	7	2.6686E 04	8	7.7077E 04				
8	3	1.3627E 03	4	2.3399E 03	6	-1.0000E 05						
9	7	1.2000E 02	9	8.0000E 02								
10	1	-1.0026E 06	2	3.4341E 04	3	8.0452E-11	4	1.0000E 05	5	-1.9318E-13	6	-5.7107E 05
11	1	-3.4341E 04	2	9.0207E 04	3	-4.8000E 01	5	-2.4000E 02	6	4.4643E 05	10	7.7271E-14
12	3	-8.5851E 02	4	5.9634E 03	7	2.8617E 03	8	2.8617E 03	12	1.3199E 04		
13	1	8.0452E-11	2	-4.8000E 01	3	1.9313E 03	4	1.3627E 03	5	-1.2000E 02	7	7.5399E 03
14	1	5.7916E 03	10	-8.0452E-11	11	9.0000E 01	12	1.8887E 04	13	5.3372E 04		
15	1	1.0000E 05	3	-1.3627E 03	4	-4.2831E 04	7	5.7916E 03	8	7.5399E 03	10	-2.0000E 05
16	1	9.318E-13	2	2.4000E 02	3	1.2000E 02	5	4.0000E 02	10	-1.9318E-13	15	1.6000E 03
17	3	-2.8617E 03	4	2.8617E 03	6	-1.0026E 06	8	1.0000E 05	10	1.8061E 05	16	2.9659E 06
18	3	7.5399E 03	4	-5.7916E 03	7	8.5851E 02	8	5.9634E 03	12	-6.8681E 03	13	-1.1447E 04
19	3	-5.7916E 03	4	7.5399E 03	6	1.0000E 05	8	-1.3627E 03	9	-1.2000E 02	12	1.1447E 04
20	7	3.6380E-12	14	4.6798E 03	16	-2.0000E 05	18	-7.2760E-12	8	-4.2831E 04	12	3.4106E-12
21	10	-3.4341E 04	11	9.0207E 04	13	-4.8000E 01	15	-2.4000E 02	16	4.4643E 05	21	1.2831E 06
22	11	-4.8000E 01	12	-8.5851E 02	13	1.9313E 03	14	1.3627E 03	15	-1.2000E 02	17	-2.8617E 03
23	18	7.5399E 03	19	5.7916E 03	21	4.8000E 01	22	2.6686E 04	17	-2.8617E 03	18	5.7916E 03
24	11	2.4000E 02	13	1.2000E 02	15	4.0000E 02	21	-2.4000E 02	22	-1.2000E 02	24	8.0000E 02
25	12	2.8617E 03	13	7.5399E 03	14	-5.7916E 03	17	8.5851E 02	18	1.9313E 03	19	-1.3627E 03
26	12	-2.8617E 03	13	-5.7916E 03	14	7.5399E 03	16	1.0000E 05	17	-5.9634E 03	18	1.3627E 03
27	18	1.2000E 02	20	4.0000E 02	25	-1.2000E 02	27	8.0000E 02	26	7.7077E 04		

SBMAIN/QFSOL

FROM GETDIM, NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

FROM GETDIM, NAME = LOADS, I/O UNIT = 3, FILE = 1, ROWS = 27, COLUMNS = 1

FROM PUTLAB, NAME = , I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1

FROM PUTLAB, NAME = , I/O UNIT = 17, FILE = 1, ROWS = 27, COLUMNS = 1

FROM GETDIM, NAME = , I/O UNIT = 10, FILE = 1, ROWS = 27, COLUMNS = 27

SBMAIN/REVERS

FROM PUTLAB, NAME =	• I/O UNIT = 2, FILE = 2, ROWS = 27, COLUMNS = 27	SBMAIN/REVERS
FROM GETDIM, NAME =	• I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1	SBMAIN/REVERS
FROM PUTLAB, NAME =	• I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 1	SBMAIN/QBSOL
FROM GETDIM, NAME =	• I/O UNIT = 2, FILE = 2, ROWS = 27, COLUMNS = 27	
FROM GETDIM, NAME =	• I/O UNIT = 3, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM PUTLAB, NAME = XTN	• I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM PUTLAB, NAME =	• I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	SBMAIN/REVERS
FROM GETDIM, NAME = XTN	• I/O UNIT = 9, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM PUTLAB, NAME = XTN	• I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	ORTHOG
FROM GETDIM, NAME = XTN	• I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	
FROM PUTLAB, NAME = XTN	• I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	SBMAIN/MSOUT
FROM GETDIM, NAME = BND COND	• I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11	
FROM GETDIM, NAME = XTN	• I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1	

SBMAIN/MSOUT

PRIMARY STRUCTURE DEFLECTIONS FOR ITERATION NO. 1

NODE	DX	DY	DZ	RX	RY	RZ
1	-9.659801E-03	1.409735E-03	-	6.712282E-02	-6.536233E-02	-2.328587E-02
2	-9.698346E-03	-	-	-6.672674E-02	-6.493998E-02	2.270694E-02
3	-4.839111E-03	1.499471E-03	6.922120E-01	-8.828849E-02	-7.129719E-06	2.142868E-06
4	-4.846931E-03	-	6.845664E-01	8.465219E-02	1.337128E-06	-1.854063E-07
5	-	1.434749E-03	-	6.711572E-02	6.537950E-02	2.329019E-02
6	-	-	-	-6.673092E-02	6.493586E-02	-2.270744E-02

COMPAR

FROM GETDIM, NAME = XTN , 1/0 UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

FROM GETDIM, NAME = XTN , 1/0 UNIT = 14, FILE = 1, ROWS = 27, COLUMNS = 1

MAXIMUM DEFLECTION = 6.92212E-01 FOR DOF 12

MAXIMUM DEFLECTION DIFFERENCE = 2.35325E-02 FOR DOF 18

MAXIMUM CONVERGENCE PARAMETER = 3.39961E-02

SOLUTION HAS CONVERGED

SBMAIN

OMEGA = 1.86279E 03 RAD/SEC

FREQUENCY = 2.96472E 02 HERTZ

FROM GETDIM, NAME = BND COND, 1/0 UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM, NAME = XTN , 1/0 UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

PSTRES

PSTRES

MID-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

MEMBER	COORDINATES		EPS X		EPS Y		EPS XY		SIG X		SIG Y		SIG XY	
	X	Y	EPS X	EPS Y	EPS X	EPS Y	EPS XY	EPS XY	SIG X	SIG Y	SIG X	SIG Y	SIG XY	SIG XY
1	2.5000E 00	2.5000E 00	9.6721E-04	-2.9092E-04	2.1686E-06	9.6696E 03	-8.3256E 00	1.5490E 01	9.6767E 03	-3.1217E 01	-2.5908E 01			
2	7.5000E 00	2.5000E 00	9.6860E-04	-2.9342E-04	-3.6271E-06									

FROM GETDIM.
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM.
NAME = XTN, I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

PSTRES

TOP-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

MEMBER	COORDINATES		STRAINS		STRESSES	
	X	Y	EPS X	EPS Y	SIG X	SIG Y
1	2.5000E 00	2.5000E 00	2.5959E-03	-7.7956E-04	2.5957E 04	-8.6250E 00
2	7.5000E 00	2.5000E 00	2.5976E-03	-7.8210E-04	2.5967E 04	-3.0902E 01

FROM GETDIM,
NAME = BND COND, I/O UNIT = 1, FILE = 1, ROWS = 13, COLUMNS = 11

FROM GETDIM,
NAME = XTN , I/O UNIT = 10, FILE = 2, ROWS = 27, COLUMNS = 1

BOTTOM-POINT PLATE MEMBER STRAINS AND STRESSES FOR ITERATION NO. 1

7-135

VIII. REFERENCES

1. Ojalvo, I.U., Austin F., and Levy, A., "Vibration and Stress Analysis of Soft-Bonded Shuttle Insulation Tiles", proposed NASA CR, September 1974.
2. Ojalvo, I. U., Levy, A., and Austin, F., "Thermal Stress Analysis of Reusable Surface Insulation for Shuttle", NASA CR-132502, September 1974.